HIGH STATUS RESIDENTIAL AREAS IN CHRISTCHURCH - STRUCTURE AND STRUCTURAL CHANGE: 1878 to 1973

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(1) A map indicating the locations is in Fig. 3.9A P.109.

ABSTRACT

The classical theories of urban residential structure were developed in the early decades of the present century in America, and many of the hypothesis - particularly the dynamic elements of the Burgess - Hoyt models, have not been adequately tested in New Zealand.

High status groups in society have been assigned a dominant role in shaping the nature and character of the urban residential environment; this study therefore focuses on the high status areas of Christchurch - identified by the concentration of selected professional groups, on the basis of Wises Post Office Directories. Three time periods were selected; 1878, 1930 and 1973, thus covering a wide span of the city's development. Analysis included the use of general grouping and choropleth mapping of distributions, centrographic and analysis of variance techniques in an investigation of segregation patterns, and migration analysis in a study of the processes of change.

The initial pattern of high status segregation was concentric and centrally located resembling the pre-industrial patterns identified by Schnore and contrary to classical theory. High status growth was slow and axial, resulting in the present day sectoral pattern, but not in the form predicted by Hoyt.

Outward growth of the dominant high status area in the north-west has been minimal in the last two or three decades, with the older areas accommodating many of the new elite, and being surrounded by lower status suburban growth.

Thus the experience of Christchurch has demonstrated a number of time and culture-specific aspects of the Burgess - Hoyt hypothesis. Residential structure is related to on-going social processes with contemporary structural change in large part reflecting the tremendous growth of an increasingly affluent property owning middle-class, aided by car ownership, governmental encouragement, and an egalitarian ethic.

ACKNOWLEDGMENTS

I would like to add another truism to the English language: "He who has not had the experience of completing a geography thesis, has not lived". It is equally true however that the seemingly insurmountable problems would indeed be insurmountable without the help and encouragement of others.

I would particularly like to express my appreciation to Dr Peter Perry, my supervisor, who not only 'kept me on my toes' and often gave timely encouragement, but also spent many hours struggling to read my pencil written, much to be improved Chapter drafts.

Mike Poulson also deserves a special thanks, acting as a sounding-board during the early formative days - indeed many an urban theory was built and crumbled during the course of a single chess game. Without Mike's 'Centro' computer programme, significant sections of this study would not have been possible.

In addition, I would like to thank many others for their assistance; Doug Johnston, Pip Forer and the duty programmers for their helping hand in removing the 'd' out of the bugs in my computer programmes; Mr Lamb and Mr Wilson

and the staff of both the New Zealand Room of the Public Library and the Museum Library; Ross Barnett's critique and suggestions; Mrs J. Brown my typist, for the many hours patiently devoted to the presentation of this thesis; friends and fellow class mates for their qualified inspiration and criticisms - both were invaluable; and my parents for their financial aid and letters of encouragement.

Finally, a special vote of thanks to my wife and two children, for their forbearance, encouragement and help - particularly appreciated was the assistance of my wife in the initial data collection stage and in 'going through' my final drafts. The family must have often wondered if they just imagined the existence of a father or husband!

CHAPTER ONE

THE STUDY OF RESIDENTIAL STRUCTURE

Spatial patterns of residential structure - the social and economic patterning of urban residents (Berry 1965), have been a topic of concern to geographers and sociologists since the turn of the century, when Hurd (1903), observed that cities spread out from the centre in star-shaped patterns. The focus of attention quickly turned to intra-urban patterns of residential segregation. Basically, the social causes of segregation stem from the desire to associate with social equals; this desire is most strongly felt amongst the elite in society (Bergel 1953). Economic considerations relate to the market price of residential land and housing. The elite place a high price on land and housing, and use it as a means of separating themselves residentially, from lesser social groups. Studies have shown that the greater the social distance between groups, the greater the spatial distance within a city (Duncan and Duncan 1955). Scmid (1950) observed that high status occupational groups are segregated into high rent areas, while those of lower status occupation are equally segregated. Although these and many other studies, have tended to analyse segregation in aspatial and non-historical terms, with little significance placed on the nature and characteristics of location and change, their findings are consistent with the 'spatial models'. Three

'spatial' studies in particular, each developing from the previous one, have laid the foundations of contemporary understanding of the spatial aspects of residential structure; those of Burgess (1924), Hoyt (1939) and Harris-Ullman (1945).(1)

1.1 CONCEPTUAL BACKGROUND

(a) The Concentric Zone Model

Burgess first proposed in 1924 that a city could be divided into a series of 'natural' areas. Interest in the internal structure of cities sprang from his involvement with the ecological viewpoint developed during the 1920's at the University of Chicago.

> "Human ecology deals with the spatial aspects of the symbiotic relations of human beings and institutions"
>
> (McKenzie 1931:314).

The city of Chicago was divided into a series of five concentric zones (Fig. 1.1); Zone I contains the centre of commercial and civic life; Zone II surrounds the first with "areas of residential deterioration caused by the encroaching business and industry from Zone I" and is characterised as an "area of physical deterioration and social disorganisation"; Zone III provides lower class multiple-unit homes for the immigrant population; Zone IV is occupied by "small business-men, professional people, clerks and salesmen" in apartments

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(1) These three models are often referred to as the 'Classical' models of residential structure.

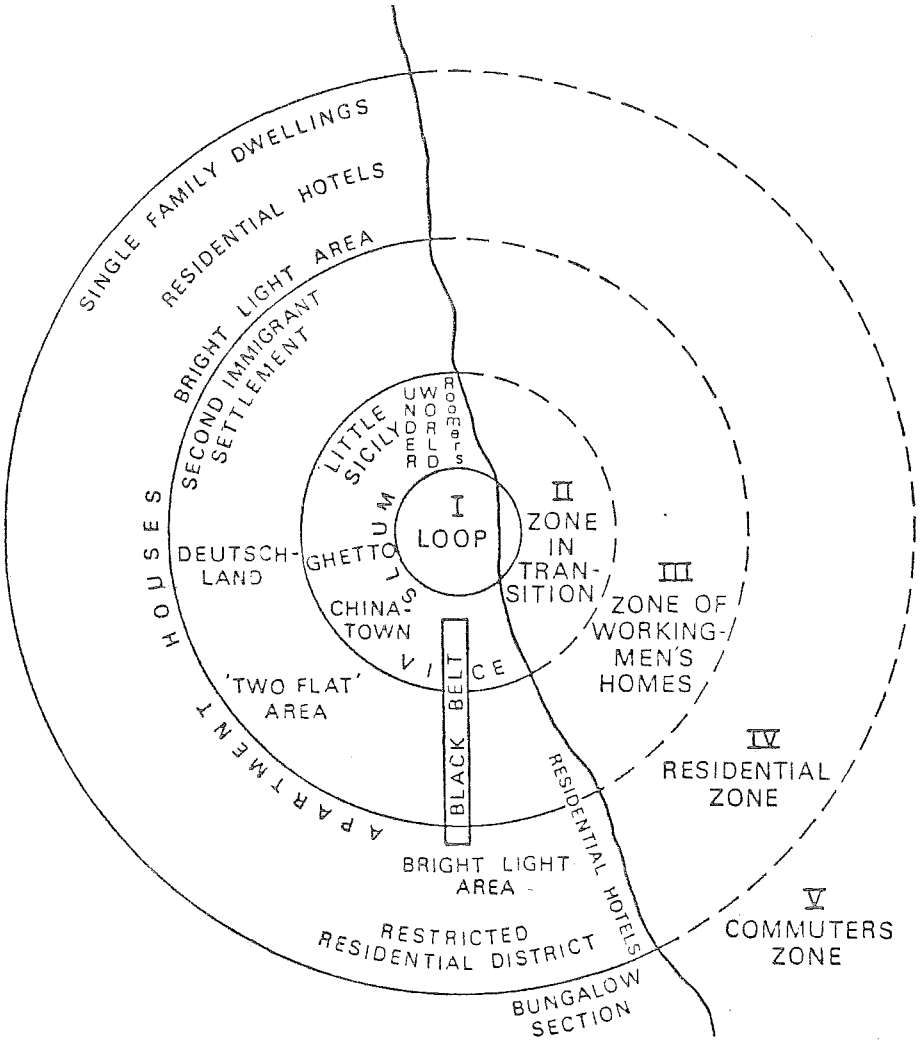

FIG. 1.1 THE CONCENTRIC ZONAL PATTERN OF URBAN RESIDENTIAL AREAS, AS APPLIED TO CHICAGO.

Source: Burgess (1924)

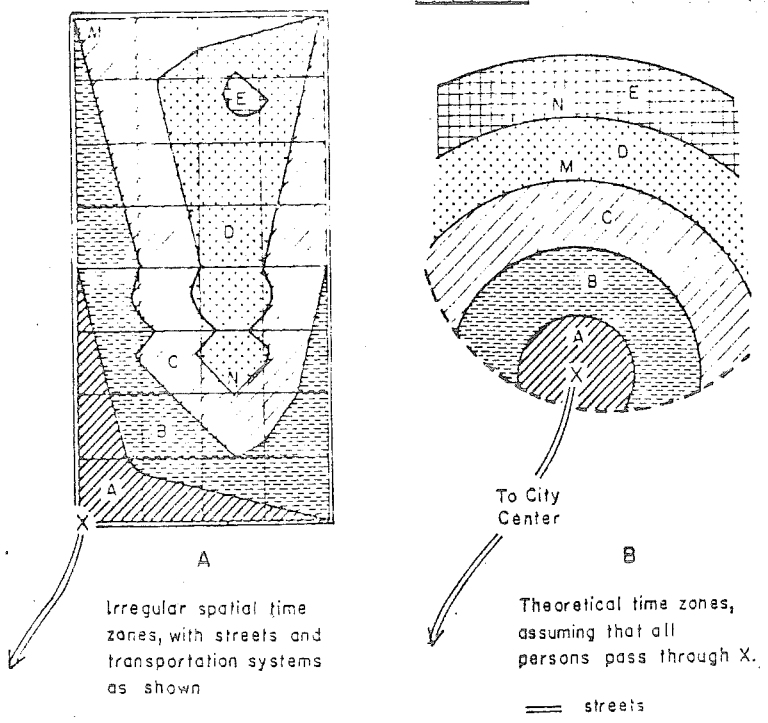

FIG. 1.2 APPLICATION OF TIME AND COST DISTANCE CONCEPTS TO A ZONAL PATTERN AROUND POINT X.

Source: Quinn (1940).

and bungalows interspersed with shops and residential hotels; while Zone V forms a ring of dormitory suburbs (Burgess 1929: 114-123).

Thus in general terms, Burgess identified zones of increasing socio-economic status with the increasing distance from the central area. The basic structure is maintained; despite the process of outward expansion. The 'mechanism' of structural change drew heavily on the analogy of plant ecology, characterised by a succession of waves of invasion and succession outward acrosss the urban surface. Certain assumptions expressed only implicitly in the hypothesis were made explicit by Quinn (1950) and Schnore (1965); a highly heterogeneous population in a growing city; a mixed commercial-industrial base, with a single centre; and a free enterprise society, with no restrictions on residential choice (Schnore 1965:354).

It may be argued that these assumptions, along with the failure to provide for the effects of variation in the physical environment and transport systems, have isolated the model from reality. Quinn (1940) has attempted to "improve" the assumptions and relevance of the Burgess model. The most important modification related to the problem of distance. Quinn maintained that the zones should be related to cost-distance instead of cost-time, as 'perfect' concentric rings will only result when there is complete agreement between distance and cost-time, however as there is never complete agreement in reality, the zones may not be geometrically

concentric, but still conform to the principles of the model (Fig. 1.2).

Empirical support for a zonal pattern has been provided by some researchers in the subsequent decades[1] (Schnore 1962; McElrath 1962), with support for the process of invasion and succession being demonstrated by others (Cressay 1938; Ford 1950). In a few studies the general principles have been validated but show differences in detail, Blumenfeld (1949) for example, was able to demonstrate in Philadelphia a general positive relationship between distance and status, but noted a reversal near the urban periphery.

Criticism of the model, on the grounds of relevance, has already been touched on (Alihan 1938; Davie 1938); however, Alonso (1964) was able to present evidence to suggest that a broadly zonal pattern will emerge in post-industrial cities, without either marked population growth or invasion and succession. Most families seek residential locations which are a compromise between the friction and costs of transport to work, and the benefits of suburban living. Land values decrease with distance from the centre, but these are counter-balanced by higher transport costs, thus the higher the income, the lower the proportion spent on transport, therefore the higher income groups are in a better position to benefit from suburban living.

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(1) For a review see Johnston (1971).

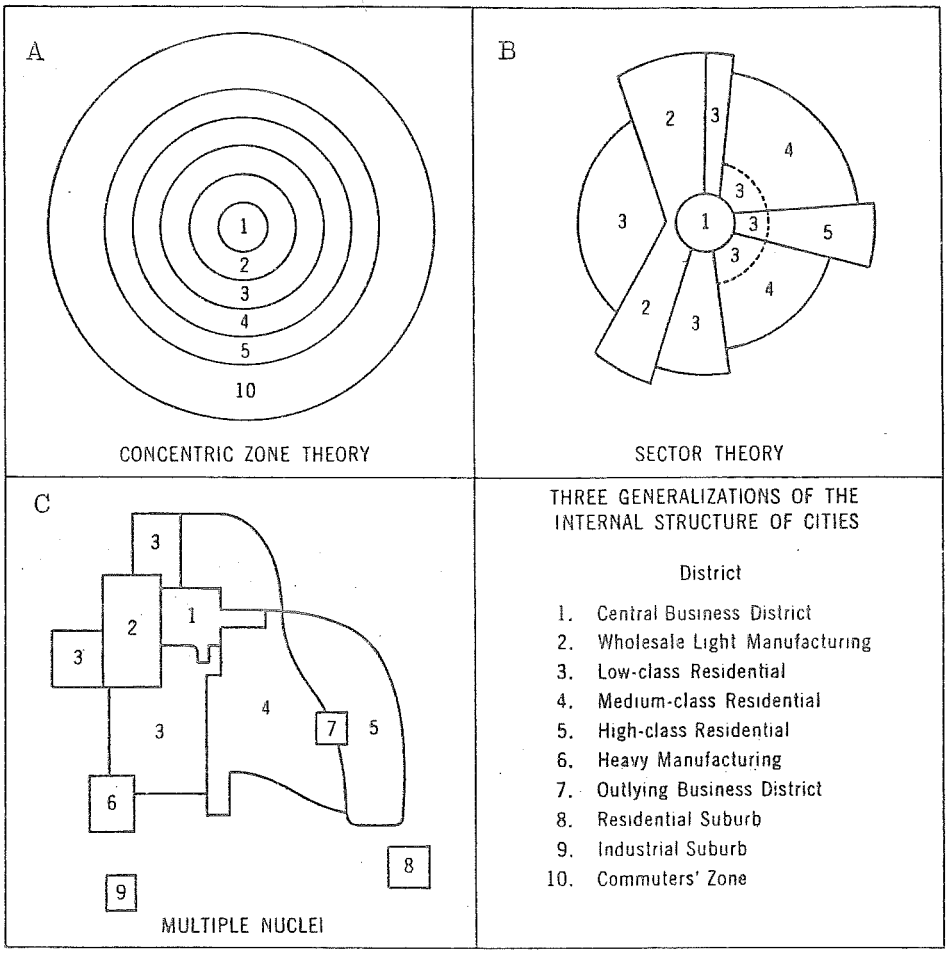

FIG. 1.3 GENERALISATIONS OF THE INTERNAL STRUCTURE OF CITIES

Source: Harris and Ullman (1945)

(b) The Sector Model

The sector model was presented as a modification of the zonal concept. Hoyt (1939), after an extensive analysis of urban residential structure was unable to accept many of Burgess's hypotheses. Detailed observation of residential differentiation (based on average block rental values) of 142 American cities in the late 1930's, led Hoyt to reject the notion of concentric zones in favour of a sector pattern (Fig. 1.3B)[1], although he did accept the concept of zones within sectors. High status residential areas, usually confined to a single sector, are believed to assume a dominant role in determining the pattern of residential segregation. The elite, by virtue of their social, economic and political influences have greater locational options, while the lesser socio-economic groups are forced to occupy the remaining areas of the city. Hoyt (1939) also built upon the processes of change outlined by Burgess (1924), with the invasion and succession hypothesis as the underlying mechanism of change. Hoyt (1939) proposed a number of spatial, temporal, social, environmental, economic and transportational characteristics and causal forces, in a theoretical explanation of high status area change (Hoyt 1939: 116).

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(1) Although Hoyt (1939) failed to include a visual representation of his model, his urbal description has prompted many to attempt a diagrammatic presentation; Figure 1.3B illustrates the effort of Harris-Ullman.

Little criticism has been levelled at the sector concept, though Hoyt (1964), later refined the hypothesis by recognising the effect of the motor car. Almost universal car ownership in America has released the sectors from close ties with the transport routes and introduced greater spatial flexibility.

(c) The Multi-Nuclei Model

Harris and Ullman (1945) based their theory on the premise, that cities develop multiple business, industrial and residential nuclei (Fig. 1.3C). They drew on a wide range of historical evidence to support the argument that many metropolitan areas have grown through the consolidation of several smaller communities. The spatial pattern of the nuclei is unpredictable, therefore, the pattern of residential segregation likewise cannot be predicted by spatial generalisations. Four determining factors for the existence of nuclei were outlined; certain activities require specialised activities; like activities tend to group together; certain unlike activities are incompatable; and some activities cannot afford the high rents of the most desirable sites (Harris-Ullman 1945:17). These nuclei form the nodes of local zones and sectors, resulting in a more complex pattern than those conceived by either Burgess (1924) or Hoyt (1939).

Although Harris and Ullman attempted an alternative formulation, it was little more than a description of reality with little theoretical substance, as "they merely continued the process of bringing the original zonal model closer to

reality...." (Johnston 1971:95). They did however, make an important contribution in underlining the need to recognise the role of local forces, especially commercial and industrial influences.

(d) Recent Formulations

Two further synthesising models of residential structure require some mention; those of Schnore (1965) and Johnston (1973).

(i) An evolutionary model. The Burgess model while having some relevance to the developed, English-speaking world, appears to have little cross-cultural application (Johnston 1971). Schnore (1965) attempted to modify the zonal model to give it wider relevance. Independent studies led to the general belief that North America possessed a 'Burgess-like' pattern with a positive relationship between distance from the city centre and neighbourhood quality; the relationship, it was believed, was reversed in Latin American cities.

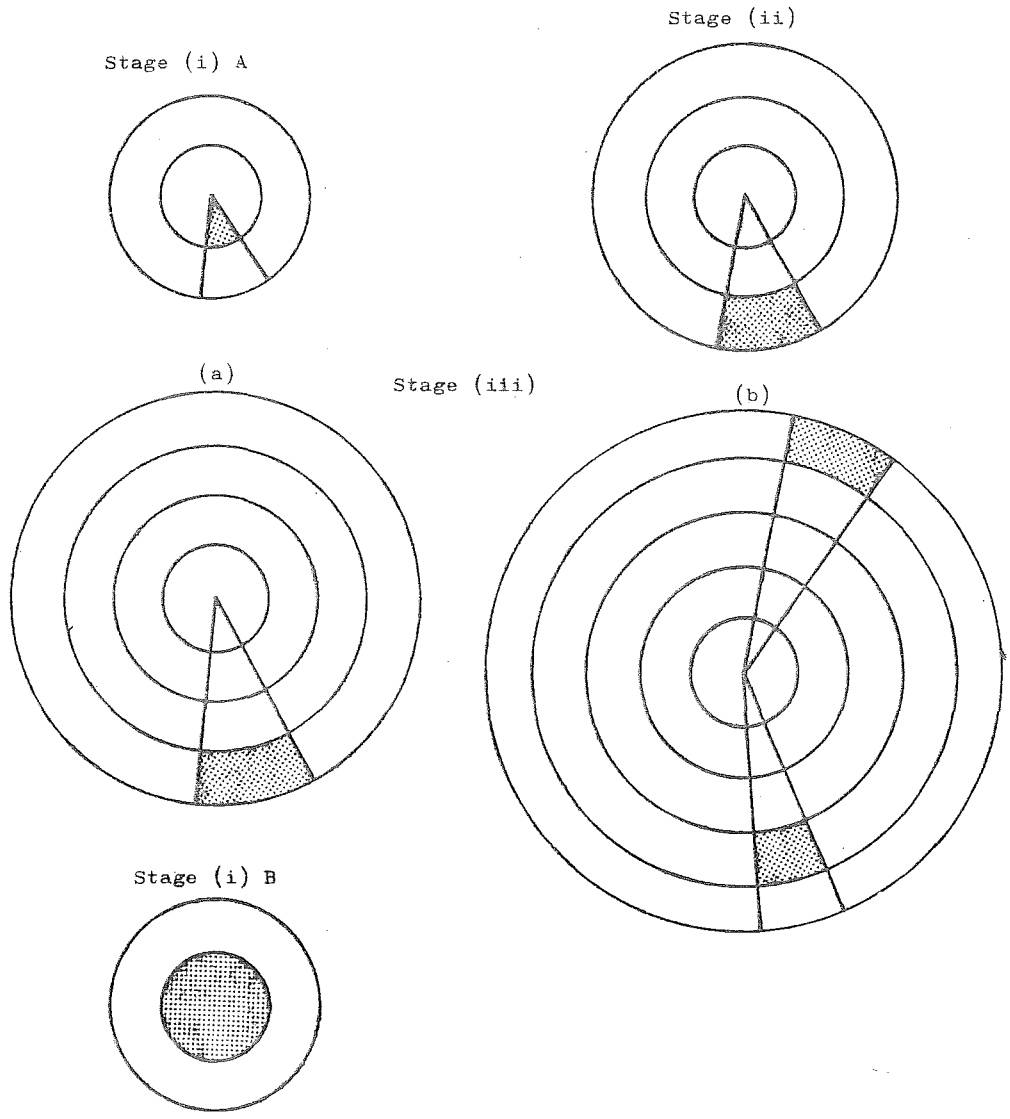
Schnore (1965) attempted to demonstrate that these two patterns were compatable, and indeed separate stages of a single evolutionary sequence, with the level of technology or modernisation as the independent variable. The pre-industrial revolution city is characterised by a status decline from the city centre, while in the post-industrial city, the elite occupy a peripheral zone.

However, the model has been criticised on two grounds. In the first place, Schnore (1965) refers almost exclusively to Burgess's model as the norm for North America, despite the fact that the simple zonal pattern of socio-economic residential structure has been largely discounted (Johnston 1973). Secondly, Schnore tended to treat the metropolitan area as a closed system, this is especially serious when referring to the process of inter-urban migration. Taeuber and Taeuber (1964; 1965) in studies of both White and Negro migrants largely discount the simple Burgess (1924) notion of new arrivals moving directly to the inner zones of the city.

(ii) "Towards a General Model". Johnston (1973) accepted the concept of an evolutionary sequence in residential structure, linked with the level of modernisation, but suggesting that Schnore's (1965) model was an oversimplification "It is not the independent variable which appears wrong....but rather the dependent" (Johnston 1973:91). A more general model of residential structure based on an extensive review of the literature, was proposed in an attempt to gain even greater cross-cultural validity than Schnore (1965) had achieved. Three stages were suggested (Fig. 1.4); the pre-industrial stage, with two basic classes, a small elite and a large artesian class, with the elite living in a quarter close to the city centre; a reversal stage, as the city enters industrial take-off it is characterised by a rapidly growing middle class, and the movement of the elite away from the city centre but within a given sector; and finally a post-industrial stage, in which the intermediate class continue to grow and

FIG. 1.4 THE LOCATION OF HIGH STATUS RESIDENTIAL AREAS

Source: Johnston (1966)



often outflank the almost "stationary" elite neighbourhood, accompanied by a possible high status area disintergration and secondary high status areas forming (Johnston 1973:110-15).

Thus Johnston (1973), presented an alternative to Schnore's formulation and the classical models, which was broader in cross-cultural application. He introduced a model "which relates the form of the city to ongoing social processes, notably the development of middle classes and their attendant housing choice behaviour" (Johnston 1973:86). The model is however, so recent it remains as yet untested.

1.2 THE STUDY OF NEW ZEALAND RESIDENTIAL STRUCTURE

The egalitarian nature of New Zealand society and welfare state system are widely recognised. Vellekoop (1969) observed relatively slight income differences, yet social stratification resulting from occupational, educational and income differences are evident in society, and these are reflected in neighbourhood segregation. Elite areas have been identified (Aburn 1971; Johnston 1969; McGee 1969), and at the other extreme low income areas of several types are recognisable (Johnston 1972).

In addition to these residential differences in socio-economic status, segregation has been observed in family status, for example, low density housing and home ownership

is closely related to familism, while non-family groups are linked with rental areas (Curson 1967).

Finally, minority group segregation is also evident in New Zealand. In the post-war years there was a widespread migration of Maoris from the rural areas to the cities (Poulson and Johnston 1972; Rowland 1971, 1972), as well as a migration of Pacific islanders to New Zealand; both migration streams resulted in the formation of tight groups within cities (Curson 1970).

In general terms, studies have indicated support for sectoral patterns of socio-economic status, but little support for concentric zonal patterns. Equally significant has been the evidence of a high degree of residential segregation, somewhat surprising in view of the egalitarian nature of New Zealand society.

Three studies of importance have been selected for consideration in greater detail; a descriptive, social oriented study of residential patterns in Auckland and Wellington; a comparative factional ecology of the main centres; and a process oriented study of the elite in Christchurch.

(a) <u>The Residential Pattern of New Zealand Cities</u>

On the basis of evidence from Auckland and Wellington, McGee presented a general model of the residential structure

of the New Zealand city (Fig. 1.5). It was observed that most high status areas were surrounded by the middle-class, and that there was no upward gradation of social grades towards the outer suburban areas. He suggested, that the lack of high status peripheral location was due to the immobility of urban society(1). Home owners are unmotivated by the prospects of residential status a shift in residense might obtain when they are wealthy enough" (McGee 1969:168).

(b) A Factorial Ecology

Factorial ecologies have been used in recent years to test Shevky-Bell's deductive model of residential differentiation, although few have made detailed comparisons between cities. Johnston (1973) made such an attempt for the four main cities of New Zealand(2).

Three questions were considered; enquiring whether the major dimensions of the social area analysis model could be represented by a single component, whether those dimensions and total factorial structures were similar in each city, and whether similar neighbourhood topologies exist in each place (Johnston 1973:163). He reached the general conclusion that

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(1) Although he did not present empirical evidence of this.

(2) Auckland, Wellington, Christchurch and Dunedin.

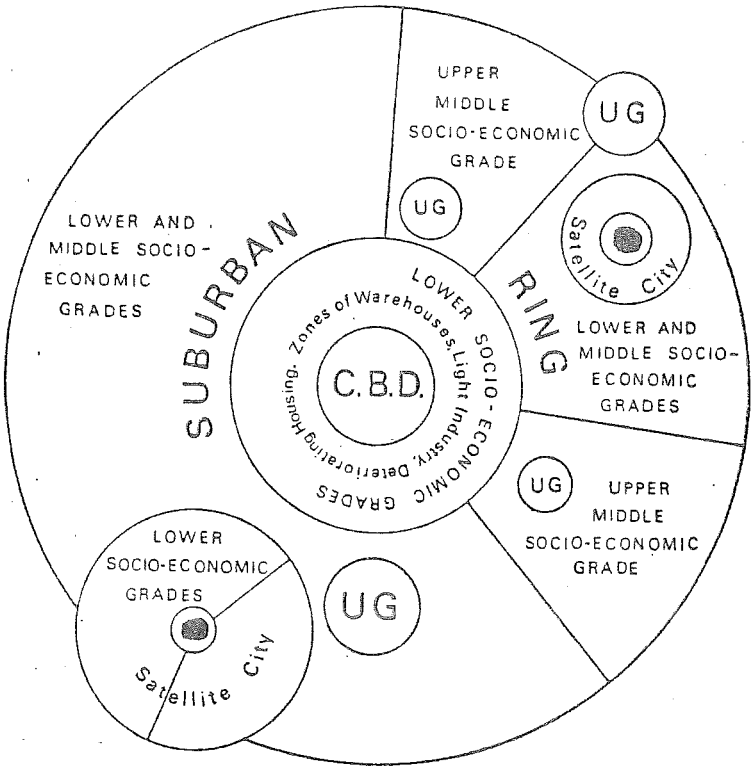

FIG. 1.5 A SCHEMATIC DIAGRAM OF THE MAJOR ELEMENTS IN THE RESIDENTIAL PATTERN OF NEW ZEALAND CITIES.

Source: McGee (1969)

New Zealand's cities have broadly similar neighbourhood structures, and that these were also broadly similar to American cities.

(c) Processes of High Status Area Change in Christchurch

Johnston (1969) based this study on the movement of the elite within Christchurch during the period 1951-64. The observed pattern of high status areas was similar to those outlined by McGee (1969), while the relative immobility amongst the elite was believed to be partly responsible for the lack of outward high status area movement. The filtering process hypothesised by Hoyt (1939) was found to be only partly operating, with the migration of elite from either zones of 'discard' or other areas of the city to the 'core' area within the elite neighbourhoods rather than the periphery while increased density was facilitated by subdivision of the large original sections.

1.3 THE PRESENT STUDY

Urban theory is based on the assumption that identifiable laws and forces shape and control the spatial distribution and interaction of social and physical elements in the city; the common elements, the internal organisation and dynamic forces are sought and brought together in general models. However, most of the models of residential structure have been developed in the North American context, three or four decades ago, and although there has been some study of

the contemporary patterns of residential segregation, the dynamic aspects of the models have not been widely applied to New Zealand cities.

The primary objectives of this study are therefore two fold. The first, is a general investigation of high status residential structure and structural change in Christchurch since 1878, calling upon urban theory to provide a framework for study where applicable, while the second is, a conscious application of a number of principles and hypotheses contained in urban theory, to the Christchurch situation. A definitive study of the models is beyond the scope of this thesis. A high degree of divergance between the models and reality may not necessarily invalidate the models, but may simply, indicate the lack of cross-cultural validity. In addition, only certain aspects of the models are being investigated, so that the observations and conclusions may not necessarily apply to the model as a whole, and furthermore definitive statements cannot be made on the basis of a single study.

The first section of the study analyses the nature and characteristics of high status area segregation at three time periods; 1878, 1930 and 1973. The theoretical bases for residential segregation, the relevance of Christchurch to the classical models, and alternative and present study data sources and methods of analysis are explored. An investigation is undertaken of the shape of the population distribution of Christchurch at different periods, to establish whether or not

the city conforms to a concentric, star-shaped or axial pattern. The basic patterns of high status segregation, defined by the residential location of selected professional groups, are identified and related to the general residential structure of the city. There is an attempt to identify the relative degree of sectoral and zonal patterning, using analysis of variance and centrographic techniques. This section is concluded with a replication of the theoretical patterning analysis of high status distribution used by Hoyt (1939).

The second section deals with high status structural change during the periods identified in the first section, which involves identifying the nature and characteristics of high status area change, and relating these to general residential growth patterns. Hoyt's (1939) model is called upon to provide a theoretical explanation of high status area change, and the relevance of the model is evaluated. Social attitudes are believed to be an important force influencing locational behaviour, and these were investigated using property advertisements from newspapers. Lastly, consideration is given to the question of social area decline.

In the final substantive section, attention is focused on the processes which underlie high status structural changes during the period between 1920 to 1940. This involves and analysis of the processes within the dominant high status sector, and the entire city. Two steps were taken; the

identification of the patterns of spatial change, and an analysis of intra-urban migration by the elite. A comparison of the results from the present study, is made with a similar investigation undertaken by Johnston (1969) in Christchurch (1951-1964), with modification to the "filtering process" being suggested, and these were investigated using the 1920-40 data. Additional investigation was undertaken of Johnston's explanation of high status area 'permanence' in the 1950's and 60's relating family status, residential densities and land use change to high status area change.

The objectives of the concluding section are threefold; to summarise the findings overall, to evaluate the relevance of Classical theory both as a predictive tool and as a framework for study in the Christchurch context, and finally to outline problems and prospects for further study.

CHAPTER TWO

PATTERNS OF HIGH STATUS SEGREGATION : 1878 - 1973

The classical models have suggested three different patterns of high status segregation. However despite the variation in geometric representation, all have placed the high status areas on the urban periphery. It is the purpose of this chapter to investigate the geometric form and spatial dimensions of high status segregation in Christchurch.

2.1 RELEVANCE OF CHRISTCHURCH TO CLASSICAL THEORY

There has been a debate in the literature about selecting the 'correct' type of city for model testing, for example, Schnore (1963) suggested that the zonal theory is not valid for small American cities. Quinn (1940) suggested that in order for the zonal concept to be relevant to a particular city, the city must possess certain attributes. These have been further refined by Schnore (1965), and essentially define post-industrial cities in non-totalitarian countries. Anderson and Egeland (1961), in a study of the relative validity of the zonal and sectoral patterns, selected four American cities, arguing that their relatively small size (200,000 - 500,000) and roughly circular shape rendered them particularly suitable.

Before the relevance of Christchurch is considered using Schnore's (1965) four point criteria, it may be useful to very briefly place the city in some geographic and historic perspective. The city of Christchurch is situated approximately a third of the way down the East coast of the South Island on the margin of the Canterbury Plains (Fig. 2.1). It is the largest city in the South Island, with a population more than twice that of Dunedin and second only to Auckland in New Zealand(1). The city is located on the coast but is separated from its port (Lyttelton) by a narrow ridge, which has been penetrated by both rail and road. Christchurch was founded by the Canterbury Association, an English colonial organisation, to be the capital of the new province of Canterbury. The first migrants arrived from England in 1850, a decade after the annexation of New Zealand. Contemporary Christchurch may be divided into a number of important suburban areas (Fig. 2.2) and reference will be made to many of these throughout the text.

(a) Population

The first point that Schnore (1965) made was that the city should be of reasonable size, possessing a certain

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(1) If the Hutt Valley population is not added to the population of Wellington.

N.Z. 1 : 4 000 000

NEW ZEALAND

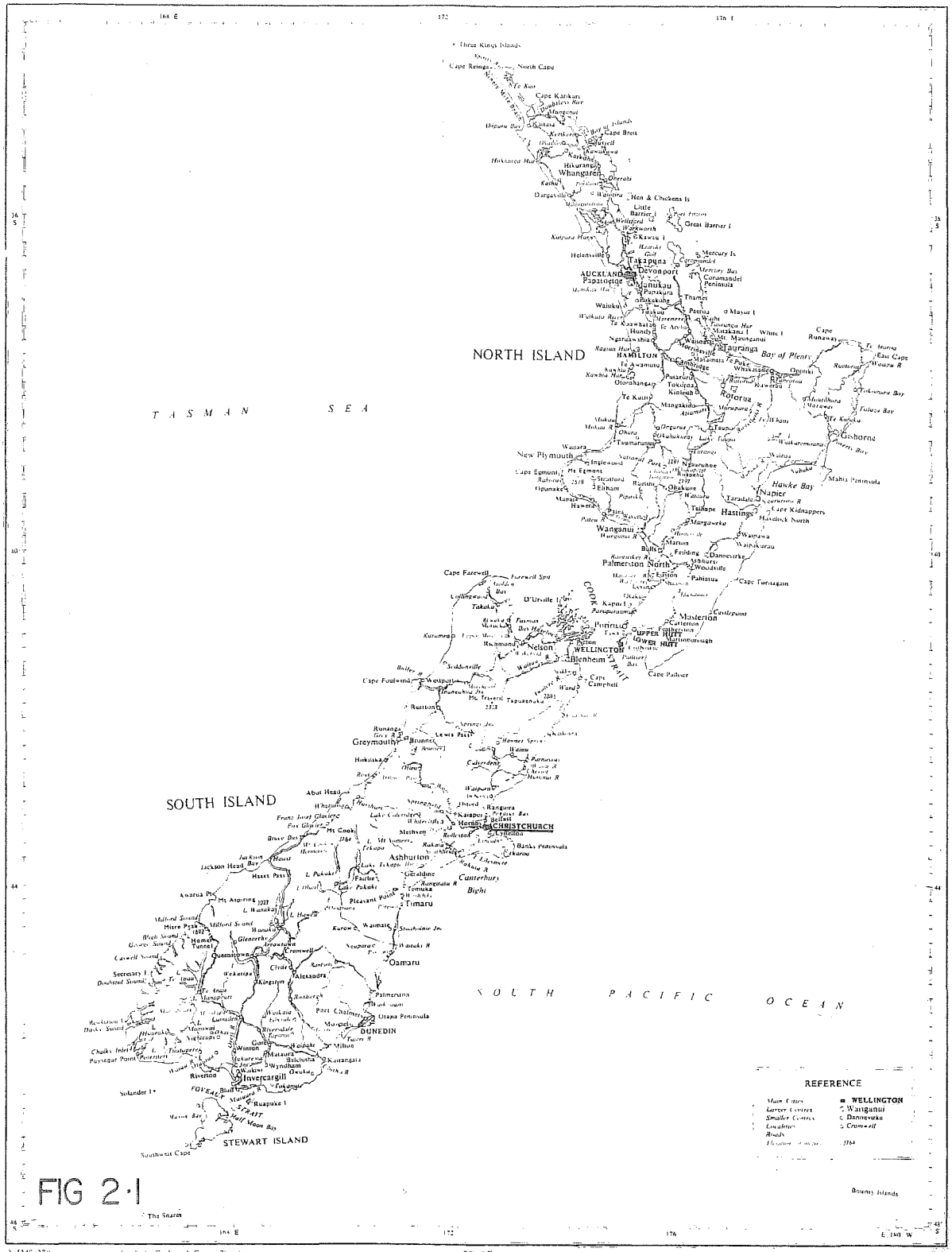

FIG 2·1

NZMS 278 — Lamberts Conformal Conic Projection with Standard Parallels at 37° S and 45° S

SCALE

1st EDITION 1974

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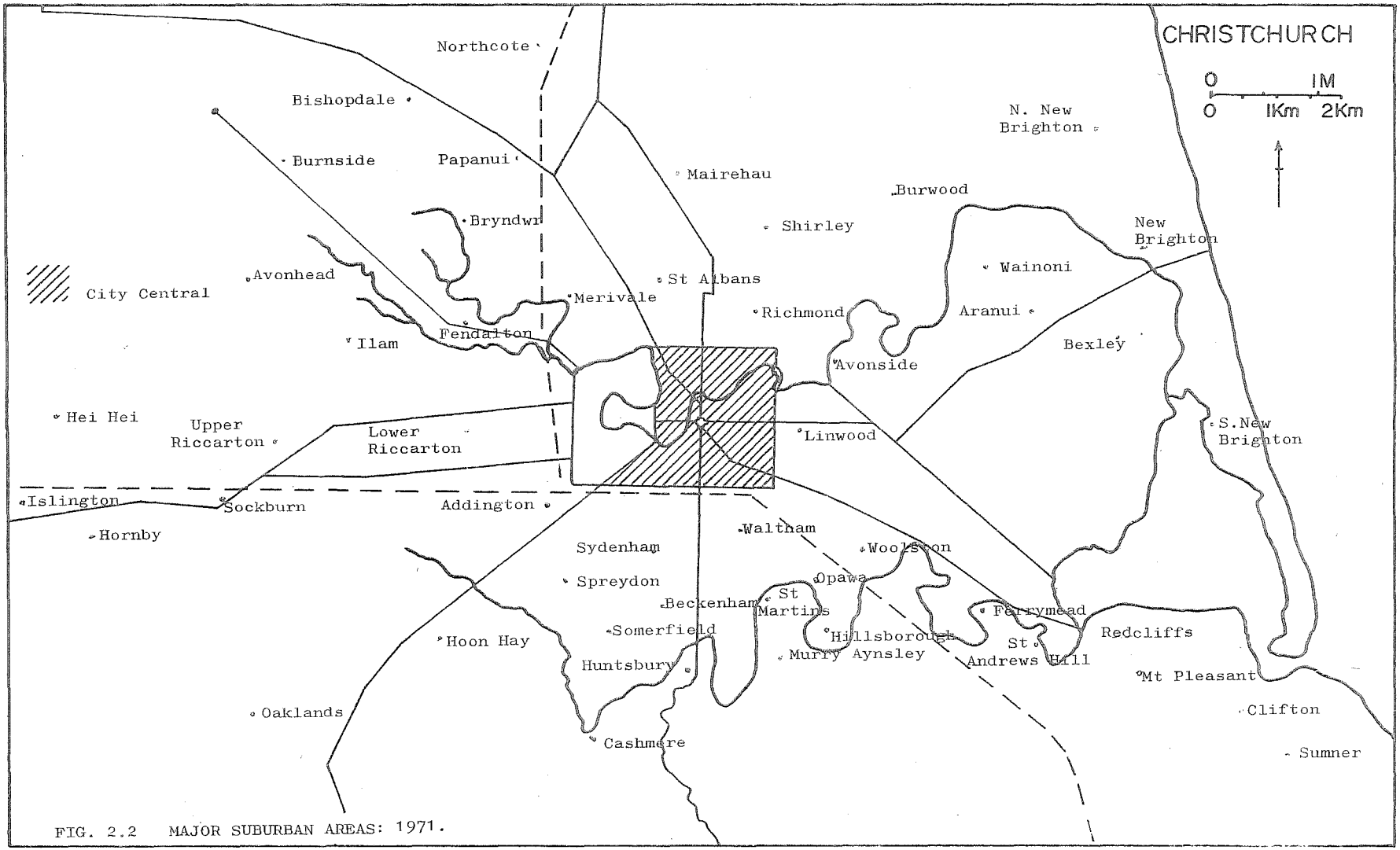

FIG. 2.2 MAJOR SUBURBAN AREAS: 1971.

growth rate[1] and ethnic heterogeneity (Schnore 1965). Christchurch presently has a population slightly under 300.000[2] and a roughly concentric shape, an ideal city in Anderson and Egeland's (1961) criteria[3]. The population growth rates may be described in relative terms as ranging from moderate to rapid. Figure 2.3A illustrates the population increase compared to Melbourne's. By comparison with Melbourne, the rate of population growth in Christchurch began to fall off quite markedly after approximately eight decades (1930's)[4]. Yet the population has continued to grow; at a rate of 2% p.a. in the last inter-censal period, and an addition of approximately 150,000 in the post-war period, a doubling of the previous population (Fig. 2.3C). Thus, both population increase rates and absolute numbers are important factors in shaping the residential structure.

The ethnic composition of Christchurch throughout its history has been remarkably homogeneous (Table 2.1). In 1878

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(1) Neither is specified in absolute terms.

(2) A population of 276,000 in the 1971 Census.

(3) 35 of the 70 cities used in a major section of Hoyt's (1938, 87) study in 1930 possessed populations less than 250,000.

(4) The population growth of Christchurch may also be compared with the cities used by Hoyt (1939); Figure 2.3B. The growth rates are broadly similar, although it is possible that these may be definition differences of a 'city' which may account for the apparently low populations for Chicago and Los Angeles.

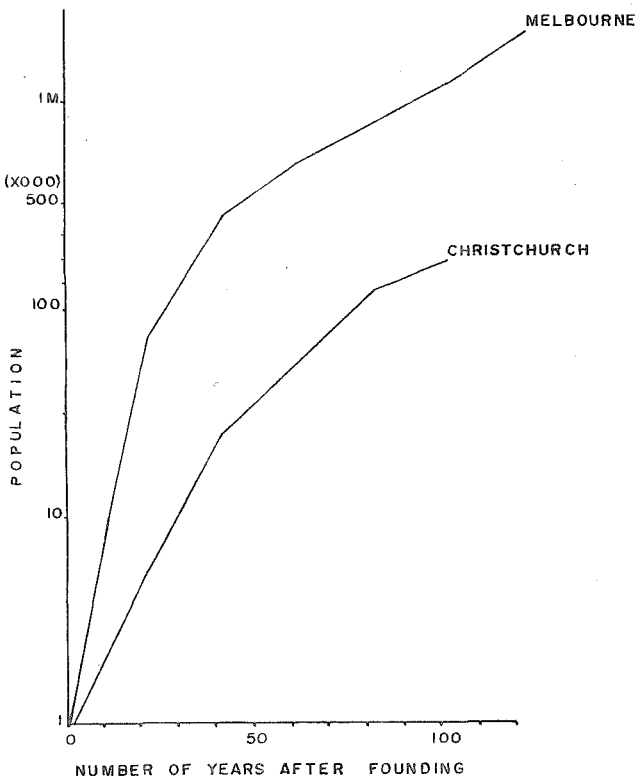

FIG 2·3A POPULATION GROWTH

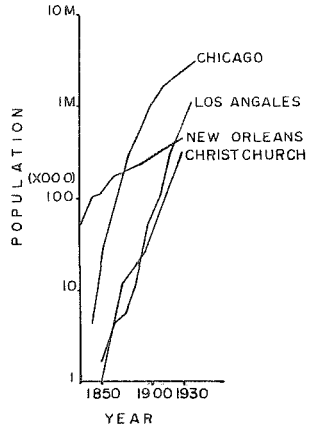

FIG 2·3B

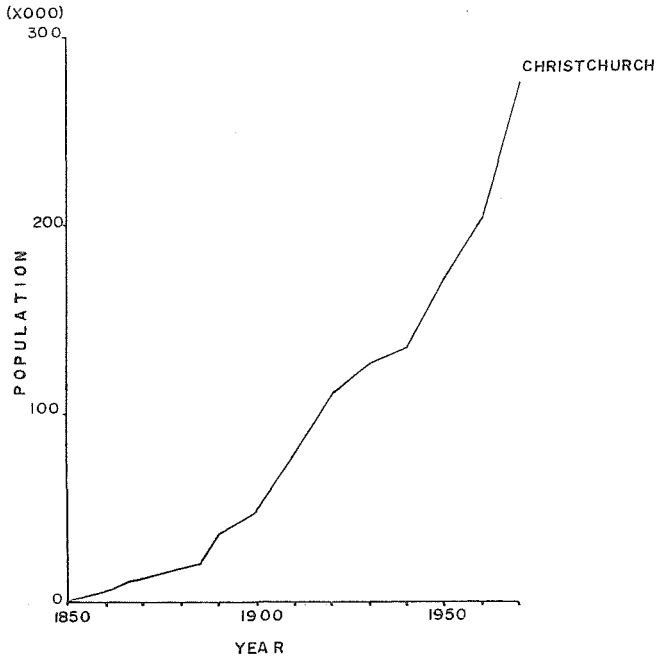

FIG 2·3 C

TABLE 2.1 ETHNIC ORIGIN Source: Census

	1878 CANTERBURY[1]			1926 CHRISTCHURCH		1971 CHRISTCHURCH	
	Nos.	%		Nos.	%	Nos.	%
Br. Subjects[2]	89,515	(97.4)	European	118,101	(99.5)	269,998	(96.3)
Foreign	2,341	(2.5)	Maori	143	(0.1)	4,440	(1.5)
Other	66	(0.1)		278	(0.4)	5,970	(2.2
TOTAL	91,922	(100)		118,644	(100)	280,408	(100)

(1) In the absence of figures for Christchurch the proportions in Canterbury will be accepted as representative of Christchurch.

(2) Includes: N.Z., Aust., British, and a very small number of 'other'.

approximately 97% of the population in Canterbury was of European origin, the proportion rose to 99% for Christchurch in 1926, then dropped to 96% in 1971, with the Maori population accounting for nearly half of the non-European population in that year.

Residential segregation is also linked with socio-economic status. In the 19th century social status was particularly important. It was well recognised that in the colonial days migrants who wished to be accepted in the elite social life of Christchurch, the passage from England had to be made in the 'Cabin Class! One commentator observed,

> "The efforts to transplant to Canterbury everything that was English led to its attracting a great number of young men of excellent family and education and some means, and this, combined with the pastoral nature of the country has brought about strongly marked social distinctions more observable in Canterbury than anywhere else in New Zealand. Up to the present, there have been widely distinguished classes - gentry and peasant - sheep-farmer and labourers....."
>
> (Sydney Morning Herald, 1867)(1).

In later years the rigidity of the social order was broken down, largely due to the emergence and rapid growth of an intermediate class resulting from modernisation (Johnston 1973). As social class distinctions declined, however,

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(1) Quoted in Morrison (1948:5).

occupational status divisions sharpened Vellekoop (1969), to a point where sociologists have been able to rank the occupations on a scale of status ranking (Congalton - Havinghurst 1953).

(b) Organisation

The city should have a mixed commercial-industrial base and ecological and social class organisation, characterised by the existence of separate socio-economic communities (Schnore 1965). It is difficult to establish the economic base of Christchurch in the early years in precise terms, since much of the census data referred to the wider provincial area, however the proportions of employment by divisions for Canterbury in 1878 (Table 2.2) may be accepted as reflecting those of Christchurch(1). Commerce and industry employed only a moderate proportion of the work force (15.4%) in 1878, with the majority involved in 'Domestic' activities; two thirds of whom are females. Yet 2% of the work force are engaged in professional activities, illustrating the high degree of sophistication in the early provincial society. Christchurch was the seat of provincial government from 1854 to 1876, enjoying a livily political atmosphere. Indeed, one of the central points of the philosophical bases of the settlement was to transplant a complete cross-section of English society to the new colony.

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(1) With the obvious exception of 'agricultural' which has been withdrawn.

TABLE 2.2 EMPLOYMENT BY DIVISIONS Source: Census

	1878 CANTERBURY(1)			1971 CHRISTCHURCH(3)	
	Nos.	%		Nos.	%
Professional	1,562	(2.0)	Agriculture/Forestry	1,682	(2.3)
Domestic	59,600	(76.7)	Mining/Quarry	117	(1.0)
Commercial	3,662	(4.7)	Manufacturing	25,867	(35.0)
Industrial	8,261	(10.7)	Electrical/Gas/Water	1,131	(1.5)
Other	4,594	(5.9)	Construction	7.731	(10.5)
			Commerce	12,769	(17.3)
			Transport/Storage/Communication	8,203	(11.1)
			Service	15,763	(21.3)
TOTAL(2)	77,679	(100)	TOTAL	73,911	(100)

(1) Provincial Area

(2) 'Agricultural' has been withdrawn

(3) 'Urban Area'.

Contemporary Christchurch does of course possess the commercial-industrial mix called for by Schnore (1965), with nearly half of the work force engaged in either manufacturing or commerce, while the service sector (most closely related to Domestic of 1878) has dropped from 67% to 21% (Table 2.2). Thus throughout its history the division of socio-economic status in society provide the bases for residential segregation.

(c) Environment

Topographical differences within a city make some areas more attractive for residential use than others (Schnore 1965). To the casual observer, Christchurch is situated on a flat featureless plain, however a closer examination reveals a number of important environmental variations. There is for example a marked contrast between the slopes of the Port Hills to the south and the plain (Fig. 2.4). Within the plain itself there are important differences, for example, slight but significant variations in elevation, in soil type, drainage differences and the variable pattern of stream and river flow. These points will be further considered in Section 3.2(a), suffice to say that environmental variations exist and these may well be important in shaping residential structure.

(d) Technology

The city should have a fast, cheap, mass transport system, since this allows commuting on a large scale and leads to sharp changes in a city's residential structure (Schnore 1965). Railways, the major mass transit system in many cities,

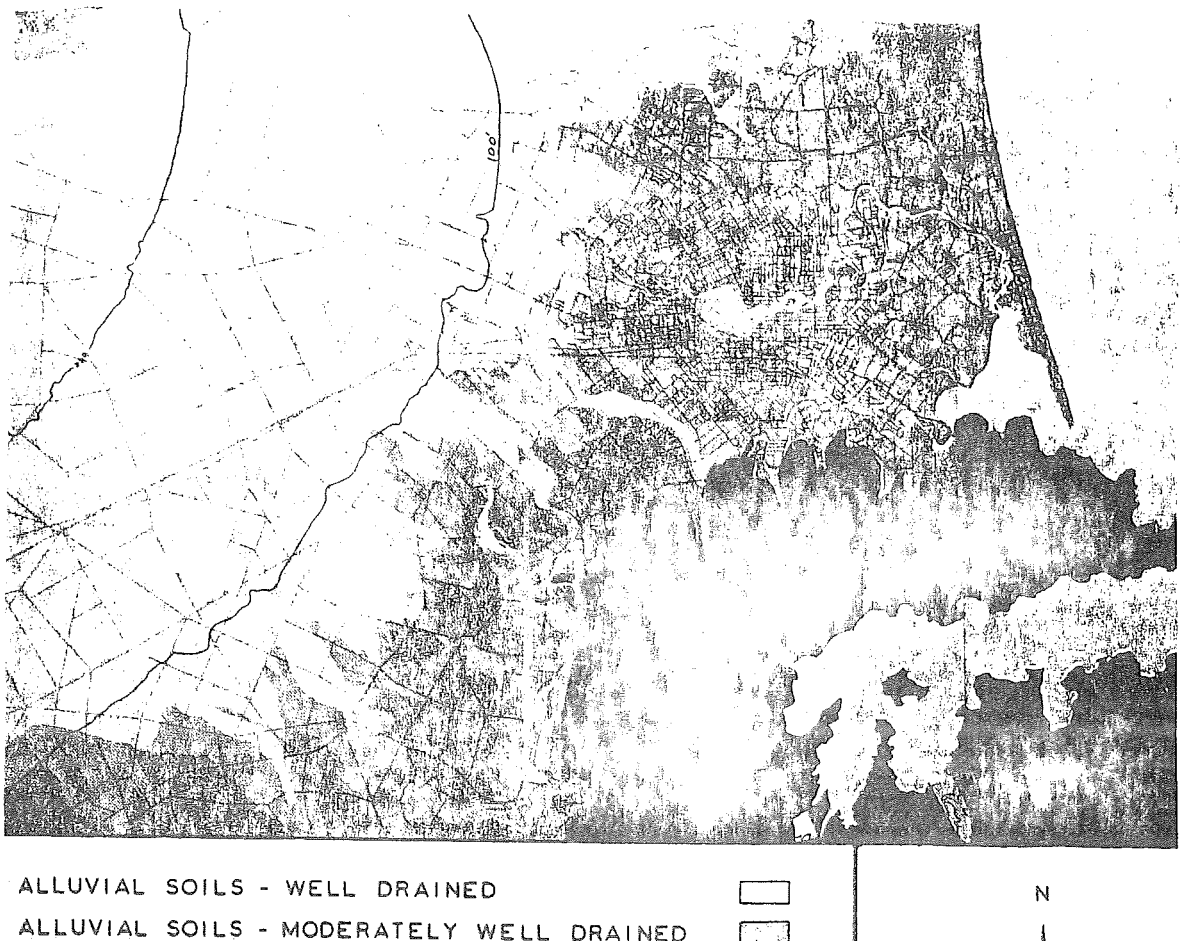
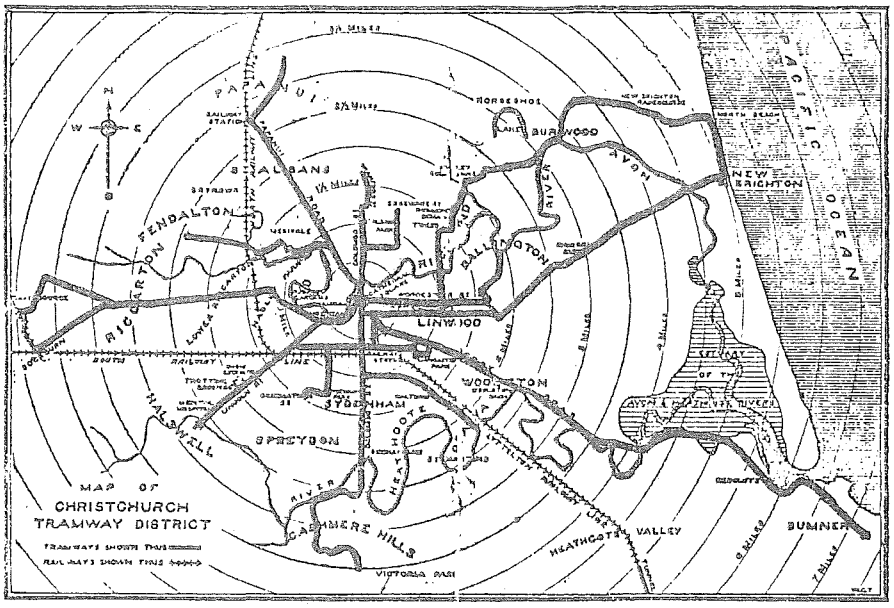


FIG. 2.4 PHYSICAL FEATURES OF THE CHRISTCHURCH SITE

Source: W. Johnston (1964).

have made little impact as a commuter service in Christchurch. The flatness of Christchurch allowed the early development of a comprehensive tramway system, with the first tracks laid in the 1870's connecting the Cathedral Square with the suburbs of Papanui, Addington, Woolston, the Ferry Bridge and Sydenham. In 1912 the network was fully extended with 53 miles of line, offering 12 routes extending from Sumner and New Brighton in the east to Sockburn in the west, Papanui in the north to Cashmere in the south (Fig. 2.5). Statistics show the overwhelming dominance of tramway transport in Christchurch until the 1940's. The peak passenger load was reached in the late 1920's with close to 26 million passengers; representing an average of 31 miles travelled per head of population or an average of 6.8 passengers per travel mile (Table 2.3). Buses were introduced in the late 1920's, with the service gradually extended so that by the 1950's buses outnumbered trams in both milage and number of units, at the same time the tramway system was gradually reduced and finally withdrawn in 1955. However buses were never able to match the records of the tram, for example in 1960 the total passenger load of the buses was a little over 21 million, and the travel milage per population was only 20.5, and the travel milage per passenger ratio was 1:4.8, all of which were lower than the comparative figures for the tramway service of the 1920's (Table 2.3). A further statistic which illustrates the secondary role of the bus is the steady decline in passenger numbers since 1960, with a drop of over 5 million between 1960 and 1972, so that in 1970 the proportion of passengers per travel milage and travel



The destinations of regular Cars are indicated by the following numbers placed on the roofs of Cars:—

PAPANUI	1	ADDINGTON (Lincoln Rd.)	6
CASHMERE HILLS AND EDGEWARE ROAD..	2	RICCARTON	8
SUMNER	3	OPAWA & FENDALTON	9
WOOLSTON	4	BURWOOD	10
NEW BRIGHTON ..	5	CRANFORD STREET ..	11
LINWOOD (Worcester St.)	6	SPREYDON (Antigua St.)	11
		LINWOOD (Cashel St. ..	12

FIG. 2.5 TRAM ROUTES: 1912

Source: Christchurch Tramway Board

TABLE 2.3 PUBLIC TRANSPORT - CHRISTCHURCH Source: 1913-39 Christchurch Year Book
1953-72 New Zealand Statistics

	1913	1923	1927	1931	1935	1939	1953	1954	1955	1960	1965	1970	1970
Population		113400	121780	127200	132000	135400	175000			214800		276000	
TRAMWAY													
Number			188	188	189	180	57	27					
Route Milage	53	53	53	53	49	44	25	6	WITHDRAWN				
Travel Milage	2125566	3457036	3775408	3098638	2834174	3132134							
Passengers	16060441	25188624	25693662	22253096	17934174	20636502							
Passenger/ Travel Milage	7.56	7.29	6.81	7.18	6.33	6.59							
Travel Milage/ Population		30.5	31.0	24.4	21.5	23.1							
BUS													
Number Trolley			11	6	11	11	11	11	11	WITHDRAWN			
Number Motor				8	6	8	105	137	154	155	166	166	
Route Milage				?	?	26	81	110	116	156	156	165	
Travel Milage				153029	100049					4414000	4596000	4571000	4619000
Passengers				507464	401053					21425000	19709000	17571000	16147000
Passengers/ Travel Milage				3.32	4.0					4.8	4.2	3.8	3.5
Travel Milage/ Population				1.2	0.7					20.5		16.8	
Total Route Milage	53	53	53+			70	106	116	116	156	156	165	
Total Travel Milage	2125566	3457036	3800000+	3253667	2934223	3132134				4414000	4596000	4571000	4619000
Total Number of Passengers	16060441	25188624	26000000+	22760560	18335527	20636501				21425000	19709000	17571000	16147000
Total Passengers/ Travel Milage	7.56	7.23	6.8	6.9	6.2	6.59				4.8	4.2	3.8	3.5
Travel Milage/ Population		30.5	31.2	25.6	22.2	23.1				20.5		16.6	

milage per population was approximately half the levels of fifty years previous (Table 2.3).

This diminished role of public transport has coincided with the renewed importance of private transport. Before the 1880's and 1890's the chief means of transport was provided by the horse and carriage, however the statistics of (Table 2.4) illustrates the decline of the horse as a source of private transport, by the 2nd World War only one hansom cab was still operating. At the same time however private ownership of the car increased rapidly so that by 1939 17,603 people in Christchurch owned a drivers license i.e. one in every seven persons (Table 2.4) and where as nation wide in 1925 only 1 in 17 persons owned a car, by 1972 the number had increased to one in three (Table 2.5). Indeed car ownership became so universal that in 1971, in both Christchurch and New Zealand as a whole an average of approximately one third of all car owners possessed two cars (Table 2.5). The diminished place of public transport as a mode of travel in Christchurch is further substantiated by a comprehensive survey undertaken by the Christchurch Regional Planning Authority (1963). For the city as a whole in 1959 only a quarter of all movers used either bus or train, the overwhelming majority (44.5%) travelled by car while another 25% used motor or pedal cycles (Table 2.6). The Authority followed up the 1959 survey a decade later, confirming the increasing dominance of the car and the further decline of the public transport (Fig. 2.6).

TABLE 2.4 PRIVATE TRANSPORT: Christchurch

	1913	1926	1931	1935	1939
Hansom Cabs	67	7	5	1	1
Horse Carriers	170	87	83	49	49
Licensed Drivers	1,019	8,695	11,160	11,814	17,603
Population	83,000	119,700	127,200	132,000	135,400
Population/Driver	81	14	11	11	7

TABLE 2.5 PRIVATE TRANSPORT - Number of Vehicles : New Zealand

	1925	1930	1935	1940	1945	1950	1955	1960	1965	1970	1972
Population	1401230	1489203	1560992	1640901	1679972	1902883	2130927	2370166	2628900	2815987	2909916
Car	81662	148090	137134	221799	199418	235463	358937	505628	691932	865594	959493
Population/Car	17.2	10.1	11.4	7.4	8.4	8.1	5.9	4.7	3.8	3.3	3.0
Vehicle	122907	218309	206157	306008	284090	380503	570183	767788	987787	1174074	1311379
Population/Car	11.4	6.8	7.6	5.4	5.9	5.0	3.7	3.1	2.7	2.4	2.2

One and Two Car Owners: 1971

	1	2
Christchurch =	42902	21468
New Zealand =	441,495	192,776

TABLE 2.6 MODES OF TRAVEL * 1959 Source: Regional Planning Authority

Zone	Approx. Dist. Miles	Car Driver/Passenger	Cycle Motor/Pedal	Bus/train	Pedestrians	Total	%
1	0.5-1.0	2494(37.2)	2067(30.8)	656(9.8)	1493(22.2)	6710	100
2	1.1-2.0	10236(40.2)	7728(30.4)	6677(26.2)	807(3.2)	25448	100
3	2.1-3.0	8128(46.3)	3925(22.8)	4792(27.9)	349(2.0)	17194	100
4	3.1-4.0	3768(52.2)	1195(16.5)	1816(25.2)	442(6.1)	7221	100
5	4.1-5.0	1843(53.5)	310(9.0)	1172(34.0)	120(3.5)	3445	100
6&7	5.1-7.0	1477(54.0)	134(4.9)	1025(37.5)	98(3.6)	2734	100
TOTAL		27946(44.5)	15359(24.5)	16138(25.7)	3309(5.3)	62752	100

* Travel to the central traffic distance (area bonded by Rolleston Avenue, Salisbury Street, Barbadoes Street and St Asaph Street) by zones (from the Square measured in miles).

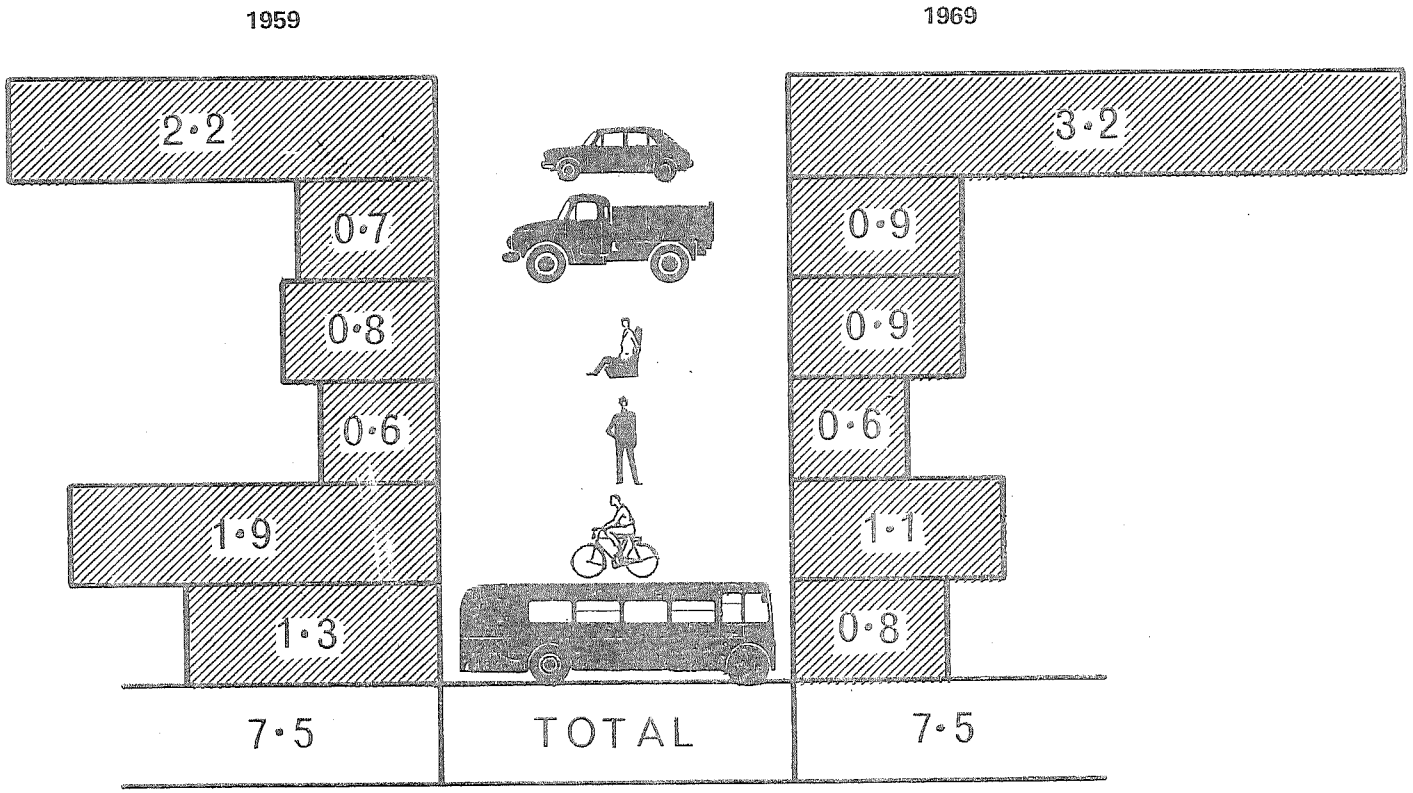


FIG. 2.6 DAILY TRIPS PER HOUSEHOLD IN CHRISTCHURCH

Source: Regional Planning Authority

The basic point which emerges from these findings is that tremendous changes have taken place in the nature of transport in Christchurch in the last half century. The statistics clearly demonstrate the role of public transport in the 1920's and 30's, thus confirming the validity of the stress placed on the importance of public transport in determining the pattern of high status change in that period. However with the passage of time, and particularly since late 1950's the importance of the car has risen to a position of overwhelming dominance in society, greatly diminishing the role of public transport as a force in high status change.

2.2 METHODOLOGICAL APPROACH

(a) Traditional Data Sources and Analysis

Both Burgess (1924) and Hoyt (1939) developed their theories inductively, and based them on a wide range of empirical data. Few data or methodological constraints were imposed. Burgess confirmed that any data relating to the land use of Chicago was collected and mapped. Hoyt (1939) however, was more selective. He suggested that it was possible to analyse residential structure by focusing on a small range of social variables. He presented the results of analysis which illustrated the validity of using average block rental values as an indicator or surregate of socio-economic status. Little use was made of statistical techniques of analysis,

the average rental values were simply grouped according to a classification from high to low and mapped to illustrate residential segregation. Harris and Ullman (1945) in contrast developed their model deductively, drawing on wide ranging documentation of residential structure and the history of urban development. No alternative data sources or methods of analysis were suggested in their study. The alternative formulations of both Schnore (1965) and Johnston (1973) were also introduced as deductive theory building. Schnore (1965) drew heavily on a series of studies in both North and South America, while Johnston (1973) turned to support from studies in Australia, New Zealand, Anglo and Latin America.

In addition to model building, a large number of studies have 'tested' the models using a wide range of data sources and methods of analysis. Many of the early studies were concerned with the residential segregation resulting from "social disorganisation". Shaw (1929) for example, tested the zonal theory using delinquency data, while Faris and Dunham (1939) concentrated on mental disorders. A large number of studies have attempted to demonstrate residential segregation emphasising the proximity of social groups to others. Hauser, Duncan and Duncan (1956) for example, developed indices of dissimilarity between two distributions. Schmid (1950) used correlation analysis to demonstrate the relative degree of similarity and dissimilarity.

The use of rental values as a data source has already been touched on, in addition, income data has also been employed (Rodwin 1961), social registers have been used with success (Firey 1949; Johnston 1966) and occupational groups have provided the data for others (Duncan and Duncan 1955). The hypotheses of Shevky and Bell (1955) and subsequent testing in a large number of factional ecologies have demonstrated the validity of the sources outline, as surrogates of socio-economic status. Furthermore the popularity of factional ecologies demonstrated the value of census data. A wide range of data relating to personal and household characteristics were used. In general the three broad constructs of socio-economic status, urbanisation and minority segregation were demonstrated in these studies and the characteristics of spatial segregation illustrated. However social area analysis is essentially aspatial (Johnston 1973). Several efforts have been made to associate the factional ecologies more closely with the spatial models, but this has proved difficult. The spatial models are dynamic models, while factional ecologies present a static pattern. Some have repeated the analysis at different points in time (Murdie 1969; Brown and Horton 1970). Yet they have only enjoyed partial success largely due to data constraints and demands of the methodology. A large number of variables are required, often in excess of one hundred (Bourne 1971). The problem is to obtain 'acceptable' data from past census records, few have extended beyond 1950 (Johnston 1971).

(b) The Basic Data Set

The analysis of high status segregation in the present study is based on occupational status data. Vellekoop (1969) has demonstrated that social stratification in New Zealand results from occupational, educational and income differences. Factional ecologies and other studies have demonstrated that these personal characteristics are highly correlated and acceptable indicators of socio-economic status (Johnston 1971). For example, Schmid (1950) has shown that high status occupational groups are highly segregated into high rent areas, and that there is a strong correlation between education, rent, income, occupation and social status. Occupational status was selected for a number of reasons. One of the objectives of the study was to extent the investigation of residential structure as far back into the past as possible. The use of census data allows the use of the powerful analytical tool of principle components analysis, however, the absence of 'acceptable' data more than a few decades into the past preclude this approach(1). A possible alternative source is provided by social registers (Johnston 1969). However, in New Zealand - Who's Who in New Zealand(2) extend back to 1908

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(1) This includes, a sufficient number of variables providing consistent data. However, changes in classification criteria, and boundary changes in census tracts as well as the absence of useful variables raise difficulties.

(2) Published by A.H. and A.W. Reed.

and only include a very small percentage of the total population raising representative sampling problems. The possibility of building a social register from the membership lists of the two elite clubs in Christchurch(1) was investigated. The problem here was that only one of the clubs would allow membership lists to be used, and again the problem of a representative sample precluded this data source. No spatially related income data is available and property values raise serious questions of validity when used as surrogates of socio-economic status(2). There are further limitations, the use of property values does not allow a comparison of densities to be made, or the movement of individuals to be traced.

The use of individual occupational status obtained from Wises's Post Office Directories(3) overcomes one of the primary objections raised earlier, the source provides consistent data which allows the analysis of residential structure to be extended back to 1878, less than three decades after the founding of Christchurch. Two sociological studies of the

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(1) The 'Canterbury Club' and the 'Christchurch Club'.

(2) Property prices are subject to market fluctuations, and these are not necessarily felt evenly throughout the housing market, for example a slump may be more acutely felt in middle priced houses, the results of such analysis may suggest a decline in the status of middle class areas, yet in real socio-economic terms there may be no change. Other objections may be raised, for example prices to a degree reflect housing age.

(3) Published by Wises Publications.

relationship between occupation and social status have aided in the selection of the occupational groups as surrogates of high socio-economic status. Congalton and Havinghurst (1954) have ranked and assigned indices of social status to various categories of occupations (Table 2.7) in the early 1950's. Doctors and Solicitors along with two categories of businessmen form the peak of the social elite in New Zealand. However, the 'correct' category of business elite is difficult to identify from the directories using the brief occupational information provided. On the other hand the members of the various professional groups are readily identified. A selection of professional groups was therefore made, using the occupational scales provided by Congalton - Havinghurst (1954) and Davis (1974)[1], these include; doctors, lawyers, dentists, university professors. architects and civil engineers. High status areas were identified on the basis of the residential distribution of these professional groups[2].

It is of course necessary to establish the validity of these professions as indicators of high socio-economic status in the past. In addition to the most recent date in the study (1973) two earlier dates have been selected; 1878, since this was the earliest that residential addresses were available, and 1930, a date approximately mid-way between the other dates.

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(1) A revised scale.

(2) Terminology requires some qualification; reference is frequently made to the 'professionals', or 'members of professions', however, only the 'selected' professionals are being referred to.

Rating	*Professionals*	*Proprietors & Managers*	*Farmers*	*Office & Sales Workers*	*Skilled Manual Workers*	*Semi-skilled Workers*	*Unskilled Repetitive Workers*	Rating
	Median	Median	Median	Median	Median	Median	Median	
1	1.56 *Doctor* 1.74 *Solicitor*	1.55 *Owner Large Business*, valued at $50,000 or over 1.72 *Director*, large financial or industrial enterprise						1
2	2.27 *Clergyman*, with University degree 2.29 *Dentist* 2.39 *University Teacher* 2.43 *School Principal* 2.47 *Engineer*, professional 2.83 *Newspaper Editor* 2.85 *Clergyman*, some University training, but not a degree	2.43 *Owner, Business*, $20,000 to $50,000 2.46 *Manager*, large financial or industrial enterprise 2.50 *Company Manager*, large business	2.10 *Gentleman Farmer* (well established, does not supervise directly the work on his property) 2.62 *Gentleman Farmer* (reasonably well established, does not supervise work on his property) 2.64 *Large Farm Owner* (supervises work on own land, but seldom works actively on it) 2.98 *Sheep Farmer*, well established –	2.44 *Departmental Head in Government Service* 2.62 *Registered Public Accountant*				2

TABLE 2.7 THE CONGALTON - HAVINGHURST SCALE: Status Rating of Occupations in New Zealand: 1953.

Source: Congalton - Havinghurst (1954)

Unfortunately, little statistical or documentary evidence is available to support the use of the selected professional groups in 1878. One avenue of investigation is to consider the academic standing of each group. In the 1878 Census a table was included which noted the number of those employed by the University of New Zealand and grouped into the various disciplines in which they held degrees (Table 2.8). The medical and legal professions dominate, yet each professional group is represented, although dentists and architects with very low numbers. An academic degree has always commanded social respect to a greater or lesser degree, thus to a point the offering of a degree in a certain professional discipline raises the prestige of that discipline(1). Lectures in Jurisprudence were offered at Canterbury College in 1874 (amongst the first lecture courses offered) and a degree offered in 1877. The Otago Medical School began in 1875, while the School of Engineering was established at Canterbury in 1888 with degrees offered in 1892. The Dental School at Otago began lectures in 1907 and the Architectural School in Auckland in the early 1920's. Members of the medical and legal professions are undisputed social leaders; their names are to be found amongst the prominent civic and political leadership of the province, they were members of the elite clubs and they owned large amounts of property. The social standing of civil engineers, dentists and architects however,

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(1) Although the offering of a certain academic course may also be a simple result of demand or sufficient numbers.

TABLE 2.8 OCCUPATION OF THOSE EMPLOYED BY THE UNIVERSITIES[1]

1878

Occupation	Nos.
Medical	102
Legal	34
Engineering[2]	9
Professors	8
Denstists	2
Architect	1

(1) Only includes those who stated their degree on the Census returns.

(2) Civil

is less certain. The fact that degrees were not offered in these disciplines in New Zealand at this time, may be more of a reflection of the limited numbers interested in these disciplines in the early years, than low professional standing, since respectable degrees were offered in these disciplines overseas. Many rose to prominant positions, were accepted in the elite clubs, owned property and lived in the same general neighbourhoods as the 'known' elite, so that by association at least, we are able to accept engineers, dentists and architects as indicators of high status.

The difficulties of establishing the social standing of the professions as high status occupations in the 1930's are less imposing. Census data for 1926 is available giving the income levels of those in various professional groups (Table 2.9). The majority earn incomes well above the average, but an index of income is afforded by computing the number of a professional group in the highest income bracket. The medical profession dominates with 96%, followed by legal, dental, architectural, and engineering(1). Thus even in the lowest professional group, engineers, approximately three quarters of the members were in the highest wage bracket. The academic standing of these professions by the 1930's was accepted with degrees offered in all disciplines.

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(1) Professors were not included.

TABLE 2.9 INCOME BY PROFESSION (Males) - CHRISTCHURCH: 1926

Income	None	52	-155	-207	-311	-363	364+	Oth.	TOT	$\bar{x}$
Nos.	18803	1891	7809	6698	13212	1953	3822 %	1970	56158	220
Medical			1	1	4	3	222(96)	-	231	364+
Chiropractor				2	-	-	8(80)	-	10	364+
Dentist		2	7	5	33	31	338(80)	3	421	364+
Engineer(1)			2	-	9	10	54(70)	2	77	364+
Architect		1	-	-	15	19	112(76)	-	147	364+
Surveyor		-	4	5	34	17	50(45)	1	112	350
Lawyer(2)			4	15	71	65	963(86)	2	1120	364+
Journalist			1	-	1	-	9(75)	1	12	364+
Teacher(3)			1	-	1	-	9(75)	1	12	364+
Accountant			2	2	38	50	358(79)	1	452	364+

(1) Civil or Consulting (2) Includes Barrister and Solicitor (3) Private School

Ranking based on the percentage of each professional group in the highest wage bracker

1. Medical 2. Legal 3. Dentist/Chiropractor 4. Accountant
5. Architect 6. Teacher/Journalist 7. Engineer 8. Surveyor

There are further arguments for retaining the six professional groups, despite the difficulties in establishing in absolute terms elite standing. The first, is that if the same variables in a data set are used throughout, then an unwanted source of variance is avoided. In addition it was felt necessary to include the six groups in 1878 in order to obtain an acceptable sample of the elite. Then the high status or elite areas of Christchurch were identified on the basis of the distribution of residential locations.

In addition, the distribution of total population data was also obtained from the directories. The data collection however, was not without its problems. The directories include information about the address and occupation of the head of the household in both a street directory (so that the exact location in a street may be noted) and an alphabetic directory(1). However in some cases it is not clear whether the address given is the residential or business premise. In some editions the private residence is indicated if there is also a business address. However, in the absence of such information, a subjective assessment must be made on the basis the immediate neighbourhood(2). The problem is however more

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(1) This allows one to trace very quickly the location of a person identified from an independent source.

(2) For example an address in a block filled with commercial or industrial businesses is more likely to be the business rather than residential, although there are undoubtedly some exceptions.

serious when attempting to identify the residential address of the professions, particularly those of doctors, and dentists. In the past doctors in particular, conducted surgery from their own homes, however, today the majority work with partners in a surgery detached from private residences(1). Additional searching is sometimes necessary to verify a private residence. It is possible to check the alphabetical listing within Wises, often the residential address is given, if the address is the same however, one can turn to the professional registers both in Wises and those of the various Associations. Other possible sources are the relevant electoral rolls, Who's Who (if available) and in the later periods, telephone directories.

However, despite searching through all possible records the addresses of some could not be verified, while others could not be found, yet acceptable samples were obtained(2).

---

(1) Note the existence of Harley Buildings, located in the commercial centre, where scores of doctors and dentists have their surgeries.

(2) 52 out of 95 in 1878 : 58%
256 out of 340 in 1930 : 75%
724 out of 830(approx) in 1973 : 86%
The low representative sample raises question about the locational behaviour of the remaining 45%, is the residual random element or is it in some way biased? The problem is raised here but the constraints of the study do not permit an investigation and therefore accept the marking assumption that the sample is representative.

2.3 "THE SHAPE OF CHRISTCHURCH"

The early growth of Christchurch (1866) was both axial and multi-nuclear (Fig. 2.7A), with residential development in the central area spreading out from the Cathedral Square and Market Place along the Avon River and main roads, particularly Victoria Street. Numerous minor settlements sprang up along other principle roads leading out of Christchurch. These initial scattered settlements reflected the spatial results of marked population growth (Hoyt 1939) and the higher price of land in the central area (Morrison 1948).

The residential pattern of 1886 (Fig. 2.7B) shows consolidation of the initial axial-nucleated pattern to form a general star-shape, similar to that described by Hurd (1903). Expansion along the main roads and outward growth generally, is an obvious reflection of a rapidly growing population (Fig. 2.3).

By 1926 the previous star-shape has given way to a roughly concentric pattern with traces of the earlier axial growth evident in the north along Papanui Road, and west along Riccarton and Lincoln Roads (Fig. 2.7C). Some nucleation also remains, with a number of new areas extended, however, the lack of obvious axial growth and new nuclei formation

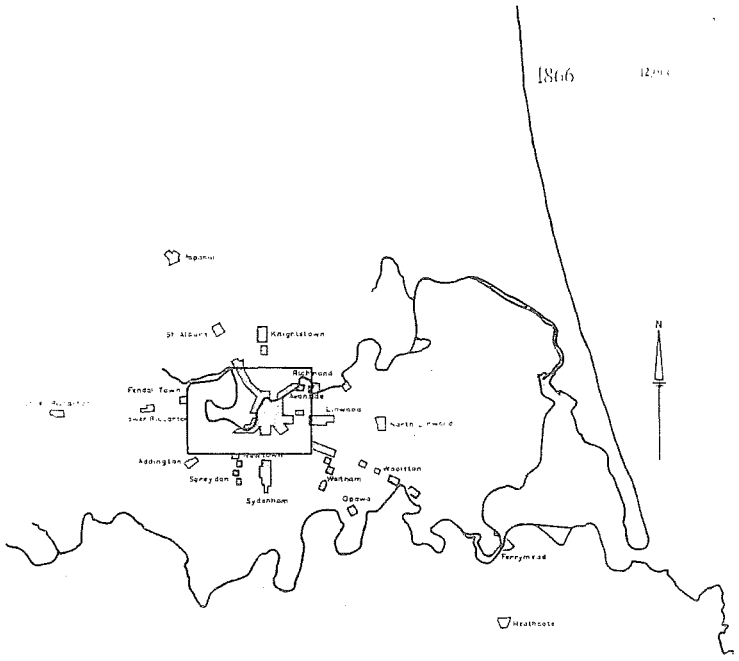

FIG 2·7A THE GROWTH OF CHRISTCHURCH: 1866
SOURCE: TOWN PLANNING

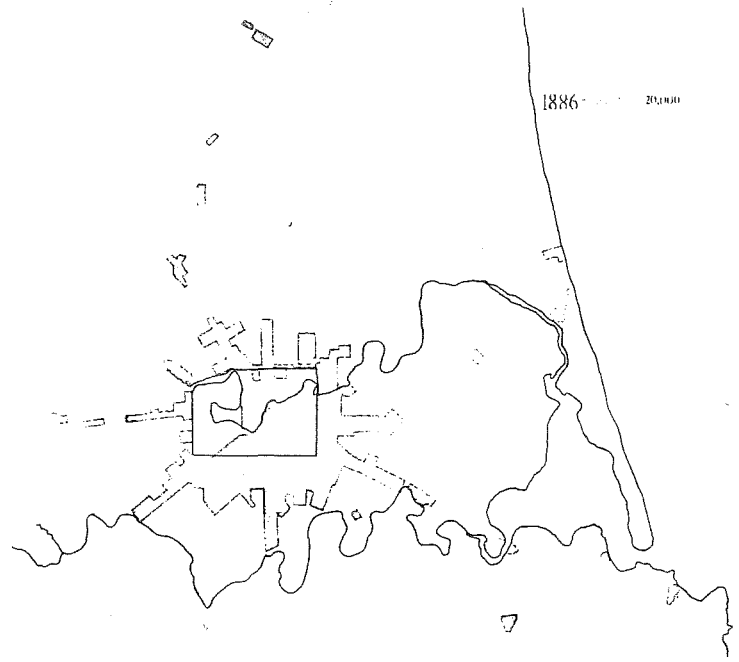

FIG 2·7B (CONT.) : 1886

FIG 2·7C (CONT.): 1926

FIG 2·7D (CONT.): 1966

reflects the reduced growthrate (Fig. 2.3)[1].

Finally, by the late 1960's (Fig. 2.7D) the city continued to exhibit the broadly concentric pattern observed in 1926, although there has been further consolidation and interstitial infilling. Evidence of axial or nuclei formation is almost totally absent, again reflecting the diminished rate of population growth (Fig. 2.3), however there is some elongation of the residential distribution along a NW-SE pattern largely due to the intensity of growth in the NW in the last two decades.

On the basis of these observations of population growth and distribution shape, a number of implications for high status segregation may be suggested. The widely dispersed population, low numbers and early stage of development in 1866 (only 16 years after founding) suggest that internal segregation would be poorly defined. The early dominance of axial growth may suggest the presence of a sector pattern, however, the more uniform concentric pattern of growth since the inter-war period may indicate a concentric or zonal pattern at least in the outer areas.

---

(1) Recognising of course the fact that as the city grows the perimeter also increases thus requiring increased population growth to sustain a continuous speed of outward growth.

2.4 HIGH STATUS SEGREGATION

(a) The Basic Patterns

Contrary to the expectations of the earlier section the contemporary spatial pattern of high status segregation was far from zonal. The highest concentrations of professionals was found in the northwestern quadrant of the city, giving Fendalton, Merivale, Ilam, Avonhead and parts of Papanui elite social standing. Smaller concentrations have formed along the southern hillside fringes of the city, notably Cashmere, Huntsbury Hill, Murry Aynsley, St Andrews Hill, Mt Pleasant and Clifton (Fig. 2.8). In addition to these highly segregated high status areas, there is also a general sprinkling of professionals through other suburbs particularly in the northern half of the city; loosely defined as middle class areas by virtue of the presence of some professionals. By implication the remainder of the urban area, particularly in the south and southeast are the lowest status suburbs.

The distribution of professionals in 1930 appears to be less spatially segregated, with the majority living in a narrow area extending north from Cambridge Terrace along the fringe of Hagley Park and into Merivale, Papanui and Fendalton with two further areas in Cashmere and an area to the east of the Cathedral centred on Latimer Square (Fig. 2.9). As in 1973 there is a scattering of professionals through other suburban areas, presumably in middle class suburbs, and again the area immediately south of the central area is almost

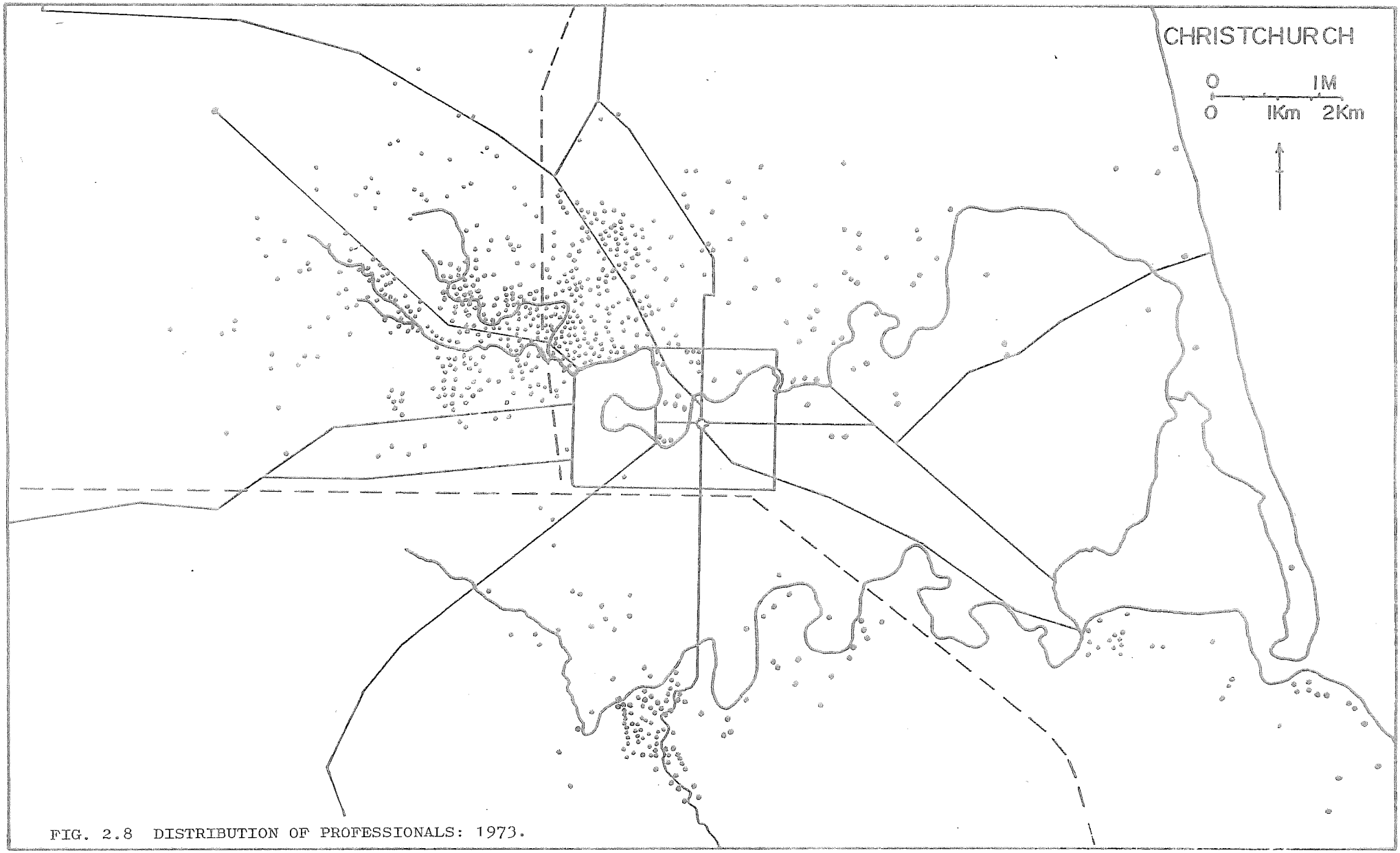

FIG. 2.8 DISTRIBUTION OF PROFESSIONALS: 1973.

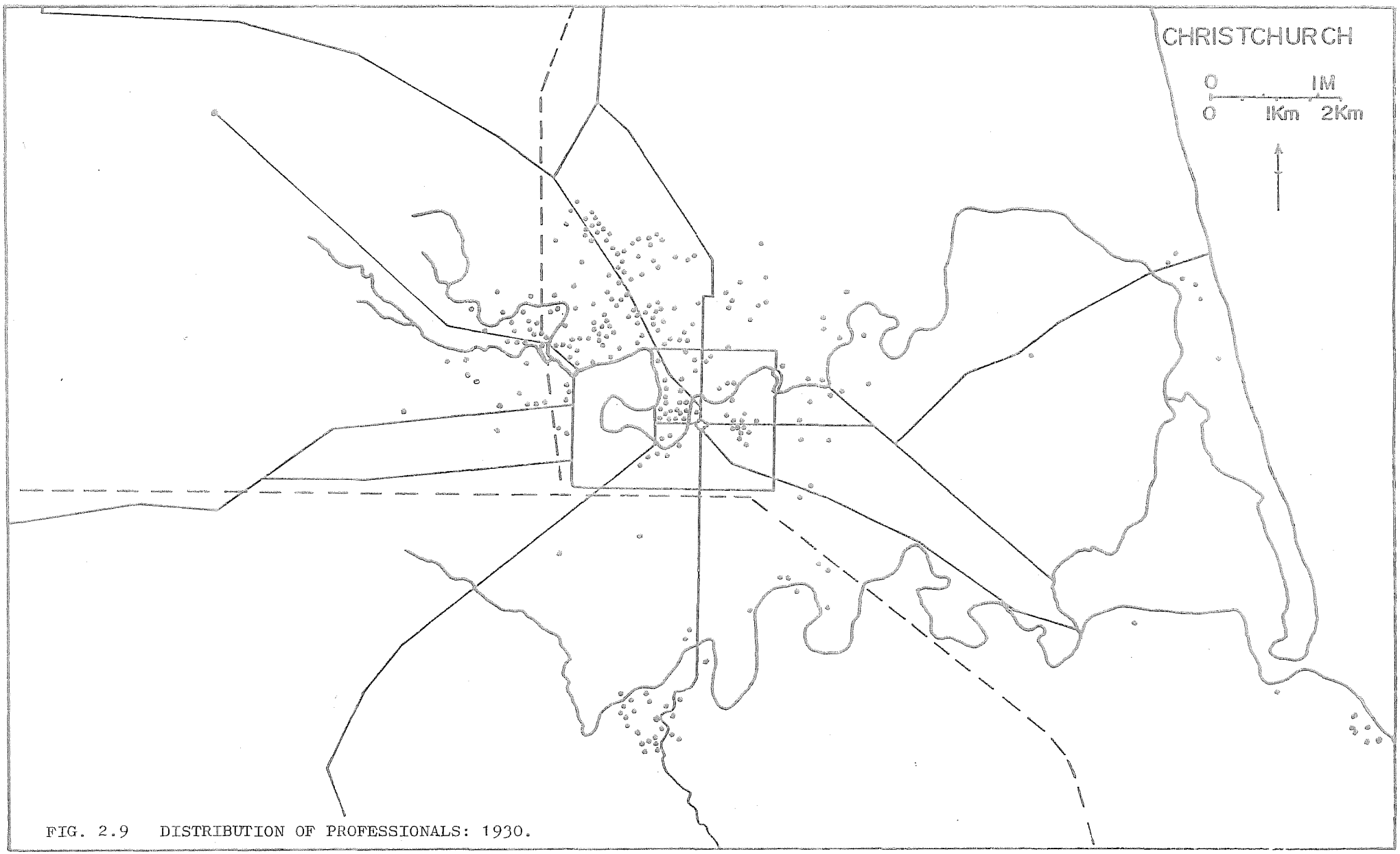

FIG. 2.9 DISTRIBUTION OF PROFESSIONALS: 1930.

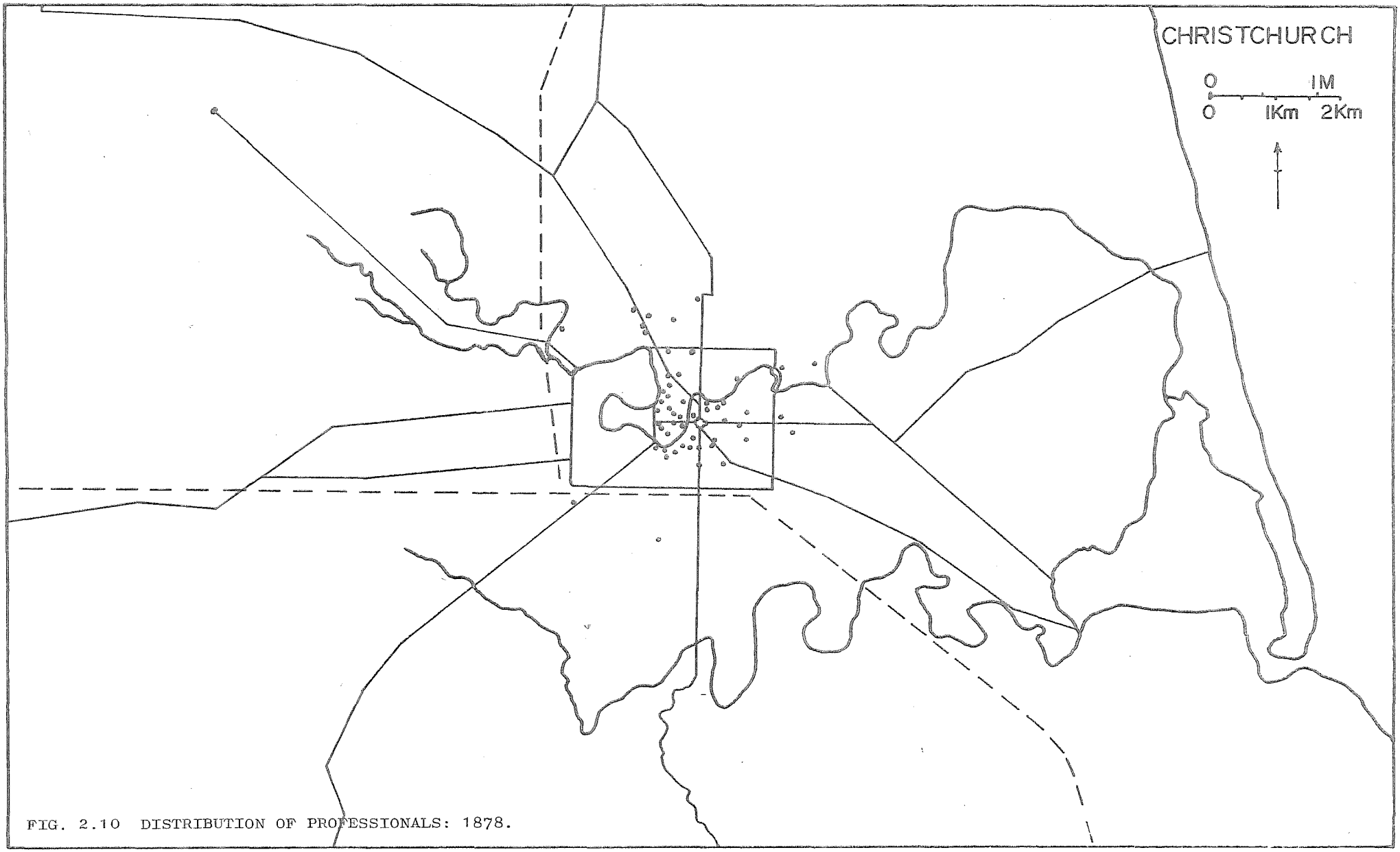

FIG. 2.10 DISTRIBUTION OF PROFESSIONALS: 1878.

totally lacking in resident professionals.

Finally, as in the two previous periods residential segregation of the elite in 1878 is obvious. The concentration is centred on the commercial centre with some tendency towards the northwest (Fig. 2.10).

(b) Segregation and Residential Structure

A high degree of residential segregation was observed at each period, yet a casual look at the maps of high status distribution (Fig. 2.7, 2.8, 2.9) suggests important differences in the relationship between these areas and the general population. However a proper analysis requires a more generalised representation of the distribution. A grouping programme based on the mean and standard deviation of each distribution was used for this purpose. The number of professionals, population and percentage population values were individually combined into their relevant grid in a two-dimensional 48 x 30 matrix covering the city i.e. there were double the number of grid coordinates of the Lands and Survey map NZMS17:Christchurch, or one fifth of the size of the original matrix used in identifying city block locations (Appendix C:Fig. 3). A city block whose centre fell within the bounds of a particular grid square would have its values incrimented to that square. This grouping procedure at times draws numbers from blocks with boundaries extending beyond those of the grid, therefore there is not a perfect correspondence between the city block and grid square

boundaries. However, in general the loss in one area is compensated by a gain in another area, so that the area represented by each grid square is roughly equal (Fig. 2.11). The mean and standard deviation for each distribution were computed, based on the totals per grid. These statistics formed the basis of a four point classification system(1). In general the 'elite' are identified as those areas with concentrations of professionals in excess plus one standard deviation, and similarly for the areas of highest population density(2).

The sectoral pattern of high-status segregation in 1973 has already been identified, and this is confirmed in the choropleth maps prepared in this section (Appendic C:Fig. 3). Yet the pattern of population density segregation is quite different, forming a roughly concentric zone around the central area at some difference, interrupted only in the west by Hagley Park. In 1973 the high status area in the northwest was isolated from the periphery, being surrounded by middle class neighbourhoods (Appendix C:Fig. 6).

---

(1) A = $\bar{x}$ + 1 S.D.
B = $\bar{x}$ to + 1 S.D.
C = $\bar{x}$ to - 1 S.D.
D = - 1 S.D.

(2) The term 'density' is used, recognising the possibility of some inaccuracy due to the boundary problem raised earlier, the density is represented as the numbers per grid square, or 550 square yards.

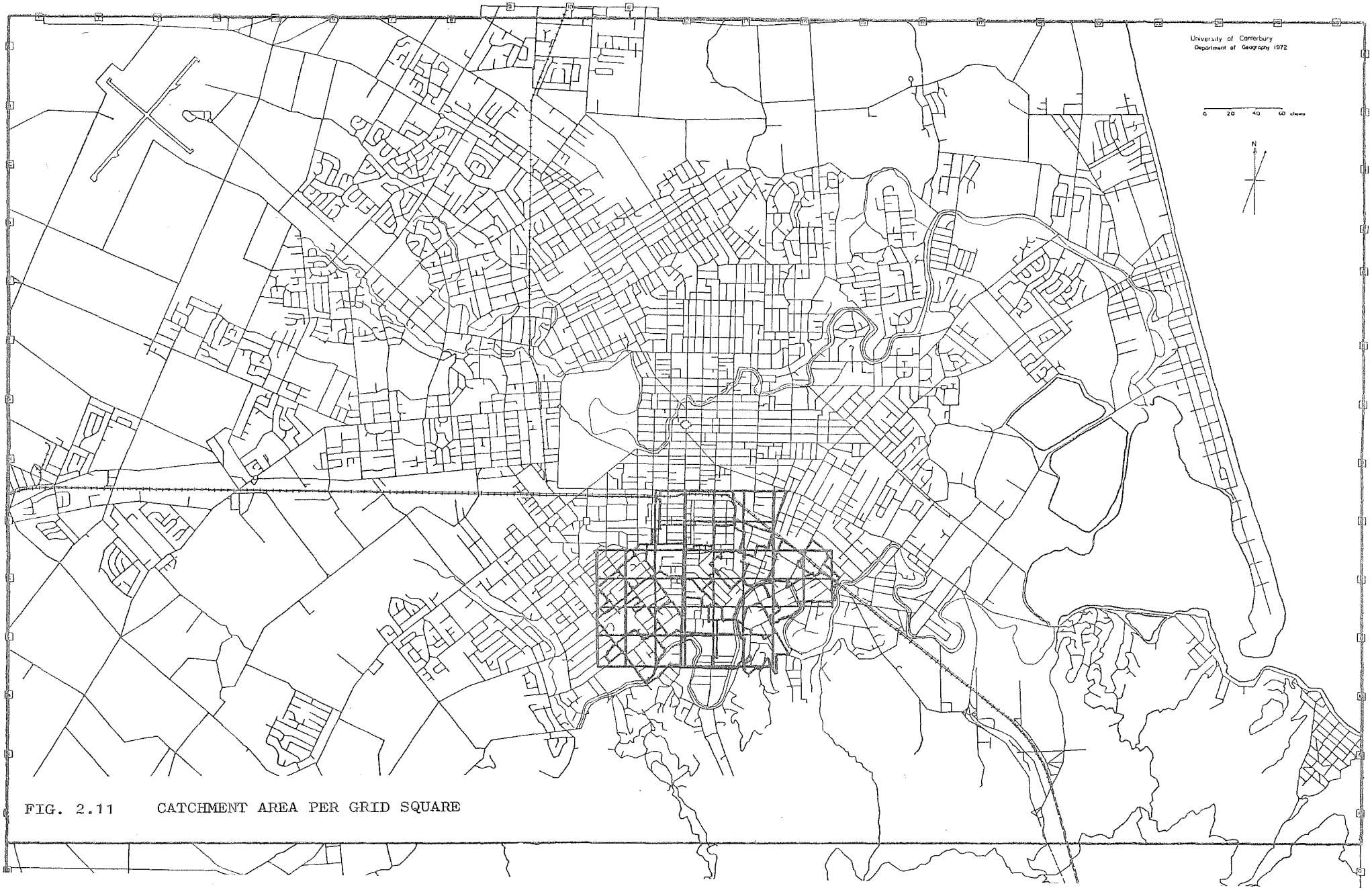

FIG. 2.11 CATCHMENT AREA PER GRID SQUARE

In contrast, the 1930 elite areas extended to the urban fringe (Appendix C:Fig. 2) and at the same time retaining contact with the central city area. The relationships in 1878 was quite different from those of the later periods, the elite being surrounded by the remainder of population.

None of these relationships observed in Christchurch conform in all details to any of the classical models. In 1973 the pattern was sectoral, yet unlike that identified by Hoyt(1939), it did not extend to the periphery and was oriented almost diagonal across the city rather than away from the central area. The pattern in 1930 extended to the periphery but also 'spread' around the central area to an extent (Appendix C: Fig. 4), while in 1878 a reasonable zonal pattern was observed but not on the periphery as predicted by Burgess (1924)(1).

---

(1) The extent of the suburban areas was difficult to establish in 1878 because in a few outer areas the names of households were listed with no reference to streets or addresses:

Riccarton	: 130 households	Philipstown	: 14 households
Merivale	: 66 households	Bigsland	: 68 households
Waltham	: 140 households	Avonville	: 59 households

2.5 SECTORALITY AND ZONALITY COMPARED

A large amount of evidence has been produced (particularly in America) to confirm in independent studies the validity or otherwise of the sectoral and zonal hypotheses, but few have been concerned with their relative validity. Anderson and Egeland (1961) used analysis of variance in a comparative study of four medium sized American cities. In an earlier study Duncan and Duncan (1955) employed the use of correlation analysis in a similar study. Basically the approach has been to divide the city into a series of sectors and zones arbitrarily drawn to form a two dimensional matrix. Statistical techniques may be applied to establish the levels of relative relationships down the columns (sectorality) or across the rows (zonality). A third method used by Harvey (1971) and others has been to apply standard elipse techniques refined and introduced to geography by Bachi (1962). Two of these techniques, analysis of variance and standard elipse analysis are used in the investigation of the relative nature of high status patterns of distribution in Christchurch at the three time periods introduced earlier(1).

---

(1) Correlation analysis was attempted on the 1973 data, but proved unrewarding. The technique fails to consider the city in its entirety, but provides a series of coefficients from which the 'break-in-slope' are to be identified, however there was little difference in the values making identification difficult.

(a) Analysis of Variance

The city was divided into a series of twenty four transects spaced at 15^{o} intervals, and six concentric zones spaced at intervals equivalent to three grid squares (Fig. 2.12) to form a two dimensional matrix of 24 x 6 cells. Within each cell a sample of the basic data grid squares as close to the centre, was selected. Sample data of the number of professionals was recorded for each time period (Appendix C: Fig. 1; 2; 3), and this formed the basis of the sectorality (analysis of the columns) and zonality (analysis of rows) comparison, using the F-ratio statistic. Within a group of sample distributions there are two sources of variance, due to the deviation of the sample means from the grand mean (among - group variance: Sag^2), and variance based on deviations of scores from sample means (within - group variance: Swg^2). The basic assumption of the analysis is that both sources of variance are estimates of population variance, thus if the among-group variance is significantly greater than the within-group variance then it is concluded that the samples do not come from the same population, and that the variance is not simply due to chance, the null hypothesis of no difference

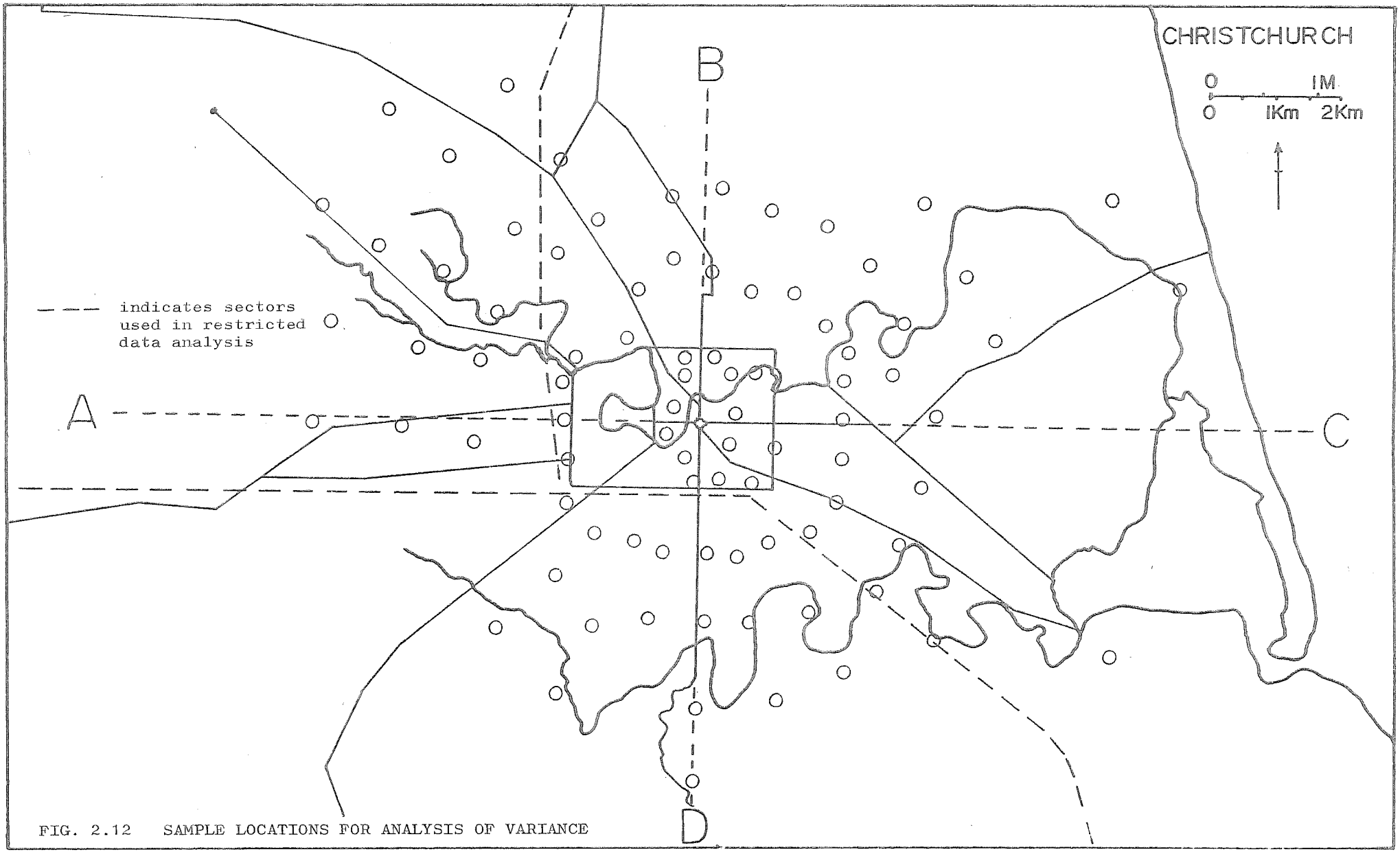

FIG. 2.12 SAMPLE LOCATIONS FOR ANALYSIS OF VARIANCE

is therefore rejected and vice versa[1].

On the basis of this analysis the high status pattern was significantly sectoral or zonal only in 1973 (Table 2.10A). The null hypothesis was rejected for the between sectors variance by a wide margin indicating the highly sectoral nature of high status distribution for the city as a whole. This was consistent with the findings of Anderson and Egeland (1961), working on similar sized cities to Christchurch, in America and using the same statistical techniques.

---

(1) The formula was taken from Chase (1967):

$$Swg^2 = \frac{\Sigma x_1^2 + \Sigma x_2^2 + \ldots \Sigma x_2^n - \frac{(\Sigma x_1)^2}{N_1} + \frac{(\Sigma x_2)^2}{N_2} + \ldots \frac{(\Sigma x_n)^2}{N_n}}{Nt - K}$$

$$Sag^2 = \frac{\frac{(\Sigma x_1)^2}{N_1} + \frac{(\Sigma x_2)^2}{N_2} + \ldots \frac{(\Sigma x_n)^2}{N_n} - \frac{(\Sigma x_t)^2}{N_t}}{K - 1}$$

x_n = individual scores 1 ...n
N_n = number of cases in a sample
N_t = total number of cases
K = number of samples

F-Ratio : $\frac{Sag^2}{Swg^2}$

Degrees of Freedom: $Swg^2 = (N_t - K)$

$Sag^2 = (K - 1)$

TABLE 2.10 A F-RATIO ANALYSIS OF VARIANCE ON SAMPLE DATA(1)

	Among Group Variance	Degrees of Freedom	Within Group Variance	Degrees of Freedom	F-Ratio	Significant 5%	Decision on Null Hypothesis
1973							
Between Sectors	26.6	23	7.9	69	3.37	1.7	Reject
Between Zones	1.7	5	14.6	87	0.12	2.35	Accept
1930							
Between Sectors	3.8	23	2.8	56	1.0	1.7	Accept
Between Zones	7.0	5	3.1	72	2.3	2.5	Accept
1878							
Between Sectors	2.3	23	3.3	9	0.7	5.3	Accept
Between Zones	4.0	1	2.7	31	1.5	4.2	Accept

(1) Matrix dimensions: 1973: 24 x 6 See Table 1; Appendix A for data
1930: 24 x 6
1878: 24 x 6 Refer to Figure 2.17 for grid sample locations

TABLE 2.10B F-RATIO ANALYSIS OF VARIANCE ON RESTRICTED DATA(1)

	S_{ag}^2	Degrees of freedom	S_{wg}^2	Degrees of freedom	F-Ratio	Significance at 5%	Decision on Null Hypothesis
1973							
Between Sectors	595	3	71	15	8.38	3.29	Reject
Between Zones	63	4	163	16	0.39	3.01	Accept
1930							
Between Sectors	75	3	23	12	3.26	3.49	Accept
Between Zones	36	3	33	12	1.09	3.49	Accept
1878(2)							
Between Sectors	28	3	21	4	0.75	6.59	Accept
Between Zones	97	1	13	6	7.4	5.99	Reject

(1) Matrix dimensions: 1973: 5 x 4 See Table 2; Appendix A for data,
1930: 4 x 4
1878: 2 x 4 Refer to Figure 2.17 for grid sample locations

(2) Because of the low numbers of professionals per grid square in 1878, all professionals have been included. In 1930 and 1973 the sample data (used earlier) has been grouped to form 4 sectors.

However the results of analysis in 1930 and 1878 were less decisive. A comparison of the values observed with the theoretical indices at the 5% level of significance shows that in both periods neither sectorality or zonality dominated, although the scores for 1930 indicate a tendency towards sectorality while in 1878 there was a moderate zonal bias evident (Table 2.4A). The lack of clear definition was somewhat surprising in view of the visual impressions (Fig. 2.9; 2.10). These results however may have been influenced by the choice of zones and sectors. Johnston (1970) in a review of the use of analysis of variance suggests that a small number of zones and sectors should be used since the Hoyt - Burgess models identify distinct socio-economic divisions and not merely linear gradients.

Thus a replication of the analysis was undertaken on an amalgamated data set. The sector transects was reduced from twnety four to four while the zones remained unaltered (Fig. 2.12)(1). The sample values were amalgamated so that they corresponded to the four basic quadrants used in the centrographic analysis (Appendix C:Fig. 1). The analysis confirmed the earlier observed sectoral pattern of 1973, though the level of significance was greatly increased (Table 2.10B). However, the findings for 1930 again showed no clear patterns of distribution although the sectoral tendency more evident

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(1) Except for the amalgamation of the fifth and sixth zones, but with little effect because of the low numbers involved.

with only a slight increase in sectorality necessary for it to be 'significant'; a deficit of 0.23 compared to 0.7 in the earlier analysis. The pattern in 1878 however indicates a definite zonal pattern, in accordance with the visual impression (Fig. 2.10).

(b) Standard Ellipse Analysis

Analysis of variance has proved useful in providing a single index of the pattern of elite distribution for the city as a whole, however many spatial dimensions identified by standard ellipse analysis[1] are omitted. Bachi (1962) refined and introduced such techniques to geography in the early 1960's and have been used in a wide range of studies involving distribution delinearation, especially in intra-urban migration studies (Brown and Holmes 1970; 1971)[2], as a measure.

In this analysis interest will focus on the mean centre (centroid) of the distribution, as a statistical measure of location; on the coefficient of circularity[3], of shape;

---

(1) Also referred to as centrographic or standard distance analysis.

(2) For a detailed discussion see also Lee (1966) and Neft (1966).

(3) The degree of sectorality may be identified; a value of 0.0 to 0.5 indicates sectorality, 0.5 to 0.75 indicates some sectorality and 0.75 to 1.0 reflecting distributions with no sectorality, the latter may indicate zonality or simply a random distribution (Harvey 1971).

on the angle of notation, as a measure of distribution directional bias, and on the standard radius as an index of dispersion. These centrographic measures were computed at each time period on the professionals and percentage professionals for the entire city and each quadrant, using a computer programme compiled by Poulson (1974) in a PhD study of intra-urban migration directional-bias(1).

Although these, centrographic techniques provide a concise summary statement of the spatial properties of a distribution, there are however areas of potential weakness, and the interpretation of results should therefore be accompanied by reference to the original data. The technique is based largely on mean and standard deviation measures of the x and y axis of the dispersion, which are sensitive to either very high or very low frequencies. In spatial terms,

---

(1) The formula used includes:

(i) mean centre: the intercept of $\bar{x}$ and $\bar{y}$: $= \frac{\xi x}{N} \; ; \; \frac{\xi y}{N}$

(ii) standard radius: the square root of the sum of the variances of x and y:

$$C^d = \sqrt{\sigma x^2 + \sigma y^2}$$

(iii) angle of orientation: $\text{Tan } 2\,\emptyset = \frac{2r\,\sigma x\,\sigma y}{\sigma x^2 - \sigma y^2}$

(iv) standard ellipse coordinates: standard deviation along reoriented x and y axes:

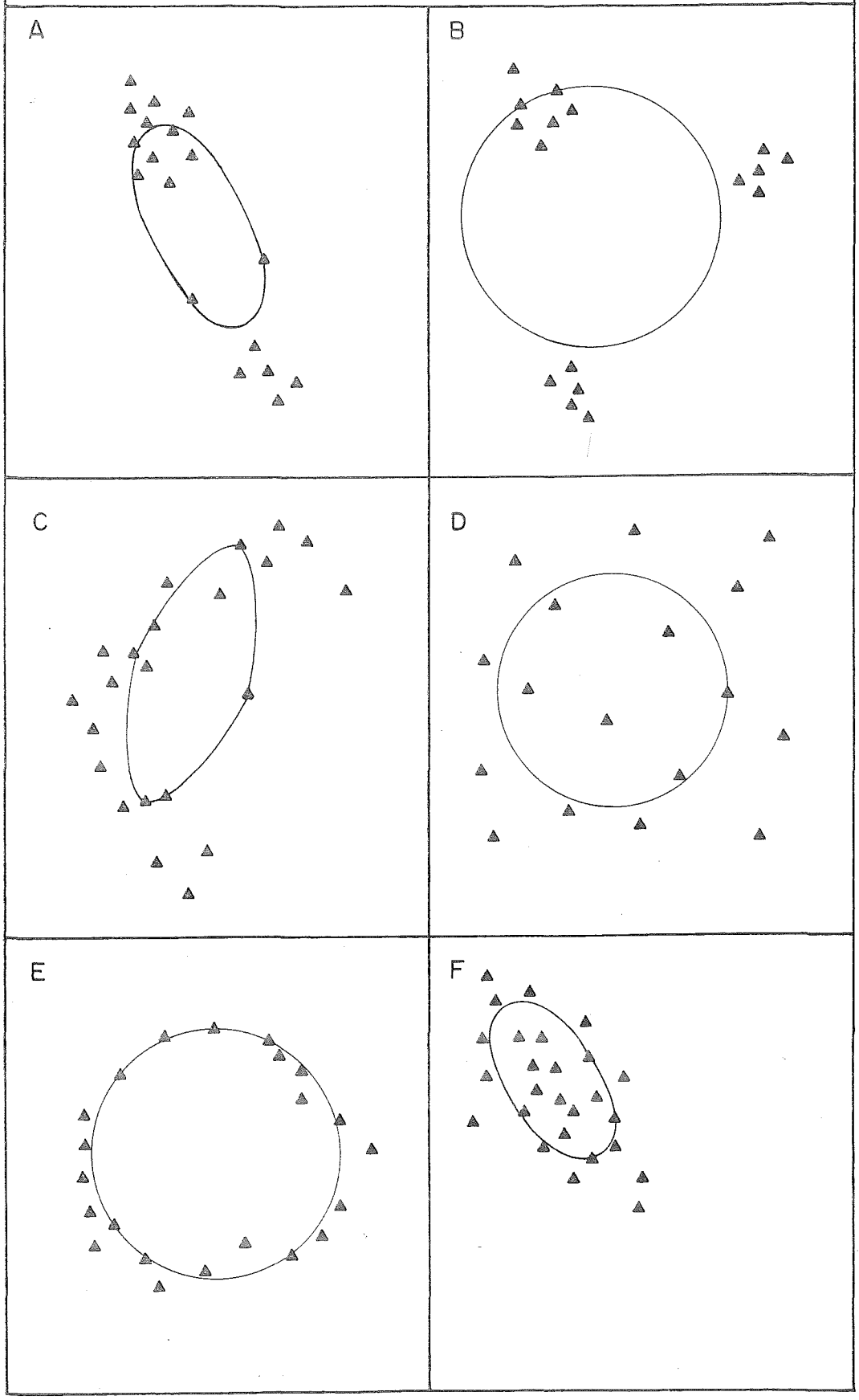
$$Sx = \sqrt{\sigma x^2\,\text{Cos}^2\emptyset + \sigma y^2\,\text{Sin}^2\emptyset + 2r\,\sigma x\,\sigma y \text{Sin}\emptyset\,\text{Cos}\emptyset}$$

$$Sy = \sqrt{\sigma x^2\,\text{Sin}^2\emptyset + \sigma y^2\,\text{Cos}^2\emptyset - 2r\,\sigma x\,\sigma y \text{Sin}\emptyset\,\text{Cos}\emptyset}$$

this means that widely dispersed values exert a greater influence on the statistical indices than their numbers may suggest, and therefore under certain distribution patterns anomalies may emerge. For example, in Figure 2.13 the ellipse of area A may indicate a high degree of sectorality. In fact the distribution clearly shows two distributions both fairly circular in shape with the mean centre located outside either distribution. The ellipse accompanying area B is more circular, possibly indicating a zonal pattern, however again there are more than one distribution present and the ellipse merely reflects the dimensions of 'best fit' between the distributions, with the mean centre at a considerable distance from any single nuclei. In area C the ellipse is moderately sectoral, yet the distribution is crescent shaped. The ellipse associated with area D is almost completely circular, but the distribution is random with no zonal pattern. Finally, in areas E and F the ellipse faithfully reflects the distribution patterns; concentric zone and sector, respectively.

The present analysis is based on the original data distribution (Fig. 2.8; 2.9; 2.10) in which each city block was assigned a six figure grid reference indicating the centre, i.e. each block was placed into a 240 x 160 matrix and the values of the professionals assigned to the relevant grid locations. Earlier analysis identified a sectoral high status pattern in 1973 (Table 2.8), yet the centrographic analysis is able to assign a precise location for the mean centre of

FIG 2·13 THEORETICAL EXAMPLES OF CENTROGRAPHIC RESPONSES TO DIFFERENT DISTRIBUTIONS



the distribution; in the northwest in North Hagley Park (Fig. 3.1; Appendix B: Table 1). The fact that the centre is not located in a residential area of the northwest (as a visual impression suggests; Fig. 2.8), testifies to the counter-balancing influence of the secondary high status areas in Cashmere and the hills. The coefficient of circularity (0.486) confirms the sectoral pattern identified earlier. An angle of rotation of 38° (on the y axis) indicates a distribution oriented NNE - SSW and not leading out away from the central areas a Hoyt (1939) suggested, reflecting the presence of Hagley Park as a barrier separating the fashionable areas of the northwest from the commercial centre (Fig. 2.8).

In 1930 the coefficient of circularity (0.54) indicates the lack of a clearly sectoral pattern identified earlier, although the coefficient also shows the tendency towards sectorality reflected also in the F-ratios (Table 2.10A; 2.10). The centre of the distribution is slightly more central than in 1973 but clearly in the northwest sector; corner of Victoria and Salisbury Streets. The angle of notation is little different from that of 1973; 35° (Appendix B: Table 1).

In the earlier analysis of variance on the high status distribution of 1878 no district pattern was identified in the extended analysis (Table 2.10A) but a 'zonal' pattern was observed in the restricted analyses (Table 2.10B). However a coefficient of circularity of 0.67 reflects the 'indistinct'

but moderately concentric pattern(1). The mean centre of the distribution was very close to the business centre; on the corner of Durham and Gloucester Streets, again reflecting the concentric nature of the distribution, yet the NNW directional bias (155^{o} on the y axis) and the fact that the centre is slightly in the northwest reflects the initial formation of a elite sector growth in the NW (Fig. 2.15).

The two techniques of measuring the relative sectoral-zonal patterns of high status distributions have shown almost complete agreement; a sectoral pattern in 1973, indistinct pattern but with a sectoral tendency in 1930 and slight disagreement over the 1878 pattern; indistinct with concentric tendencies and significantly concentric.

2.6 HOYT'S THEORETICAL PATTERNS OF HIGH STATUS DISTRIBUTION: a replication.

In the decades following the publication of Hoyt's (1939) sector theory, numerous studies have investigated the question of sectorality, however, most have employed a wide range of sophisticated statistical techniques, and few have attempted to follow the methodological approach used by Hoyt. A tendency

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(1) Likewise there was no significant sectorality indicated when the high status distribution within the northwest quadrant was considered separately (Appendix B: Table 1).

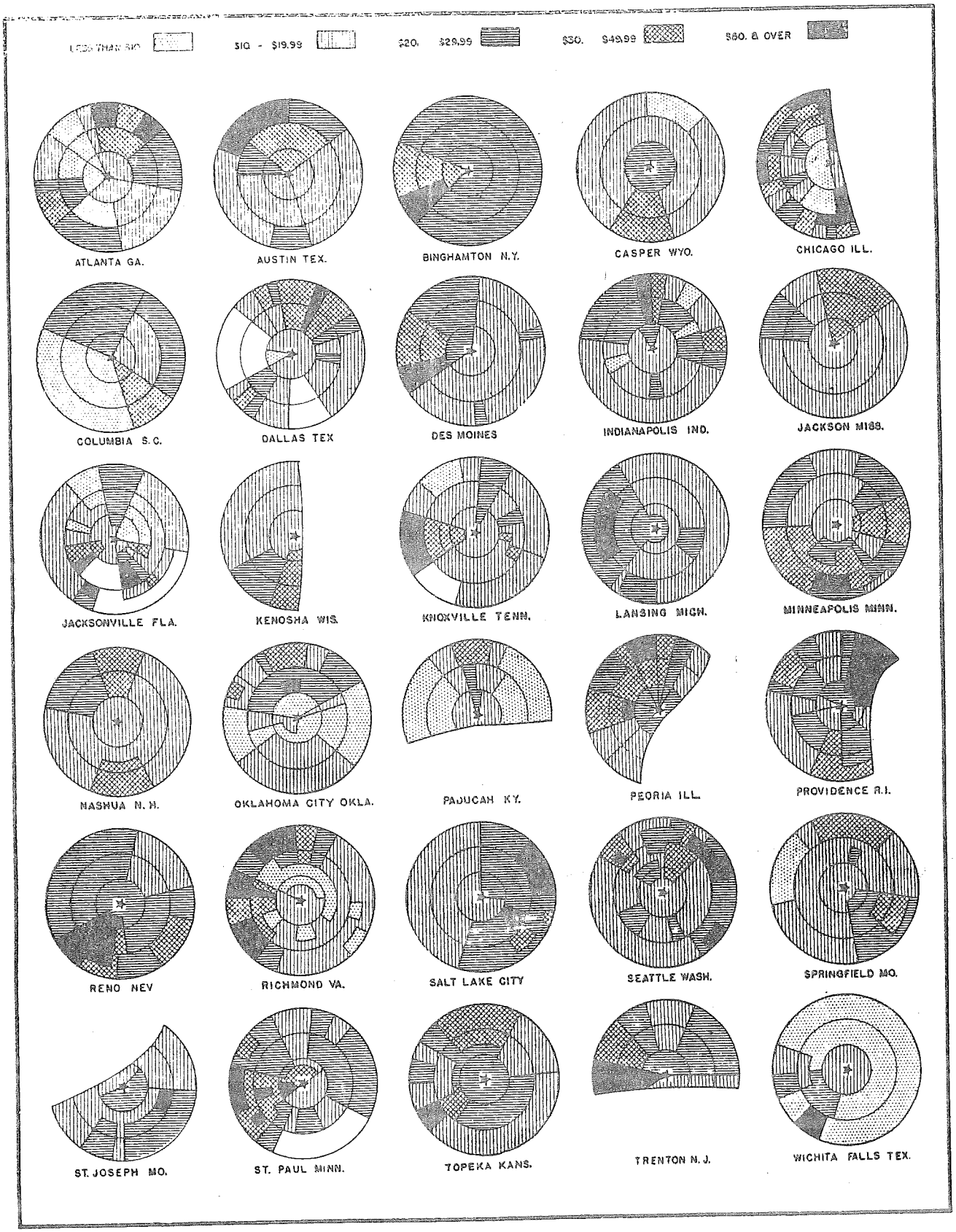

FIG. 2.14 THEORETICAL PATTERN OF HIGH RENT AREA DISTRIBUTION IN 30 AMERICAN CITIES

Source: Hoyt (1939).

in establishing the level of sectorality, is to compare the patterns of high status segregation identified in a particular study with the theoretical patterns depicted by Hoyt (1939) (Fig. 2.14). Yet in order to make a meaningful comparison both patterns should be reduced to a similar level of generality. The patterns outlined by Hoyt (1939, 77) (Fig. 2.14) were never intended to be anything more than highly generalised diagrammatic representations. For example the choropleth map of rental areas for Seattle (Fig. 2.15) appears to bear little resemblance to the pattern of sectors and zones grouped around a centrally located commercial area (Fig. 2.14).

Thus in order to proved a more meaningful comparison with the theoretical patterns identified by Hoyt (1939), similar levels of generalisation were sought using the Christchurch data. Hoyt divided the city into three concentric zones and a variable number of sectors to form the basic framework of the theoretical social area delineation, based on a five group classification of rental values. In this study, four classes - based on the mean and standard deviation grouping outlined earlier, were used to identify the socio-economic neighbourhood patterns which formed the basis of the diagrammatic representation (Fig. 2.16)(1).

---

(1) Scale has been ignored in the sense that regardless of a city's size it was represented in the same basic framework (see Fig. 2.14), however this allows a comparison of the relative size of the high status areas in relation to the total population size at each time period.

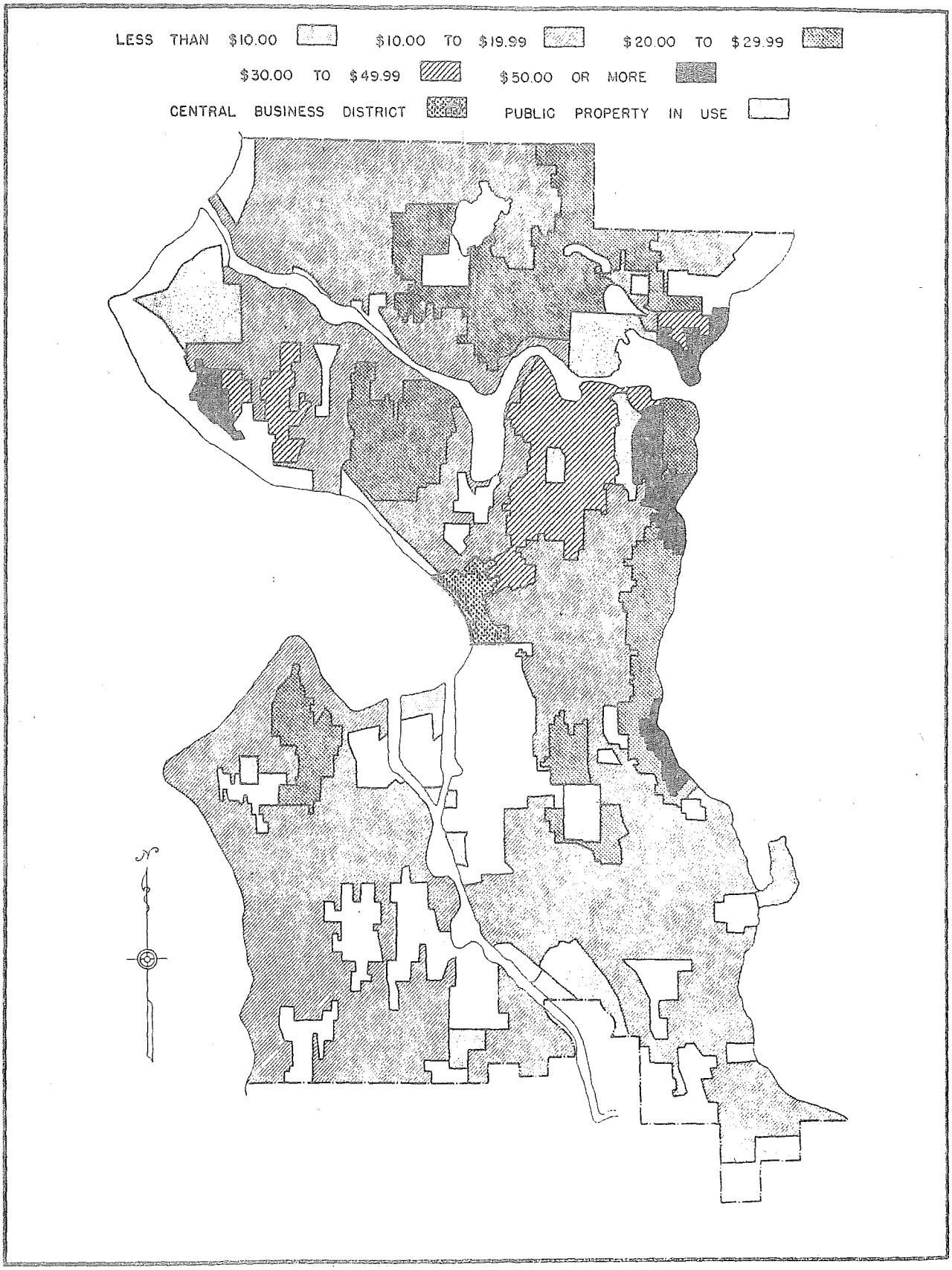

FIG. 2.15 AVERAGE RENTS IN RESIDENTIAL AREAS IN SEATTLE, WASHINGTON 1934.

Source: HOYT (1939)

The results of this analysis show that although the patterns observed for 1973 and 1930 do not conform to the 'ideal' (Hoyt 1939, 75-6) there is a basic similarity with many of the patterns depicted by Hoyt (Fig. 2.14); showing a high degree of high status segregation, located in a specific sector removed from the lowest social groups and flanked by the middle classes (Fig. 2.16). In contrast the 1878 pattern (Fig. 2.16) was unlike any demonstrated by Hoyt (Fig. 2.14), with the elite occupying a central location almost completely surrounding the city centre. This distinctive pattern however, may in part be explained by the small size of Christchurch in 1878 - less than 20,000, and the early stage of development - less than three decades after the founding of the city.

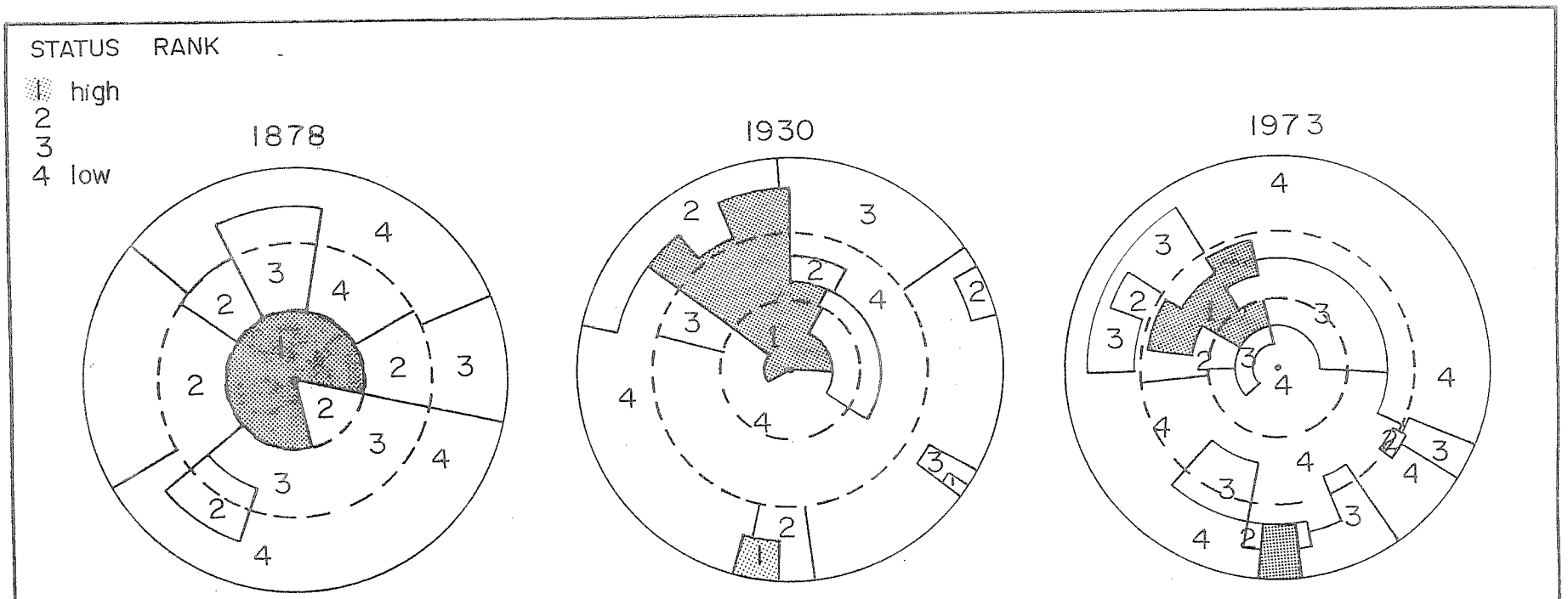

FIG 2·16 THEORETICAL PATTERNS OF RESIDENTIAL STRUCTURE : CHRISTCHURCH

CHAPTER THREE

HIGH STATUS AREA CHANGE: 1878 - 1973

One of the central issues of urban studies has been the identification and explanation of high status residential structural change. Hoyt (1939) observed that the elite initially concentrate close to the commercial centre, on one side. Outward extension within the same sector accompanies general population growth, in-migration and central area commercial-industrial expansion. Burgess (1924) similarly hypothesised outward growth, but within the framework of concentric zones; high status areas maintaining a peripheral location. Schnore(1965), using evidence drawn from a comparison of North and South American cities, suggested some modifications. A zonal pattern always exists, but the position of the high status areas within the residential pattern is reversed in the transition from a pre-industrial to post-industrial society.

Of particular interest in this section of the study is the nature and characteristics of change and the associated causal forces. Hoyt's (1939) analysis of high status area change, was used as a basic framework for this study.

3.1 NATURE AND CHARACTERISTICS OF HIGH STATUS AREA CHANGE IN CHRISTCHURCH

The characteristics of high status area change have been identified from a comparison of the spatial distributions at different time periods. In this study the location data used is basically that used in Chapter 2 of the elite segregation patterns. Four predicted characteristics of structural change will be considered, these include:-

a) relationship between high status change and population growth;

b) direction of change;

c) speed of change; and

d) continuity of change.

(a) High Status Area Change and Population Growth

Between 1878 and 1930, the growth and spatial expansion of the high status area in the northwest kept pace with population growth (Appendix C: Fig. 12, 18). This outward movement, however, was accomplished with a continuation of high status area contact with the commercial centre. In other words the extension was not accompanied by subsequent social area decline in the original high status areas within the northwest quadrant. Although classical theory predicted that the outward expansion of the high status should keep pace with population increase and thus retain a peripheral location, the process was expected to be achieved through outward migration. The retention of elite residences in the original

areas may suggest that the outward progression has been achieved by either or both of two processes; the migration from elsewhere to the northwest and/or the inflow of new professionals, (new additions to the profession or new arrivals from elsewhere), to the northwest. The question of process is of obvious relevance, but, will be investigated in the following chapter. However, the decline in professional concentration both immediately north, and particularly south of Cathedral Square may suggest active outward migration at least in some areas.

The relationship between the changes in population and professional distribution can be demonstrated by the location of the respective centroids (Fig. 3.2). In 1930, the high status area was extending to the urban periphery, resulting from the slow population growth, as well as the expansion of fashionable areas. The highest levels of population increase were experienced in a zone around the central area, interrupted only in the west by Hagley Park, which acted as a barrier separating the majority in the NW from their workplace in city central (Fig. 3.1). With the increase in growth of the industrial areas of Sydenham, Woolston, Waltham and Addington, factory and labouring employment became more readily available drawing the working class residential areas to the south and east of the central area (Fig. 3.3).

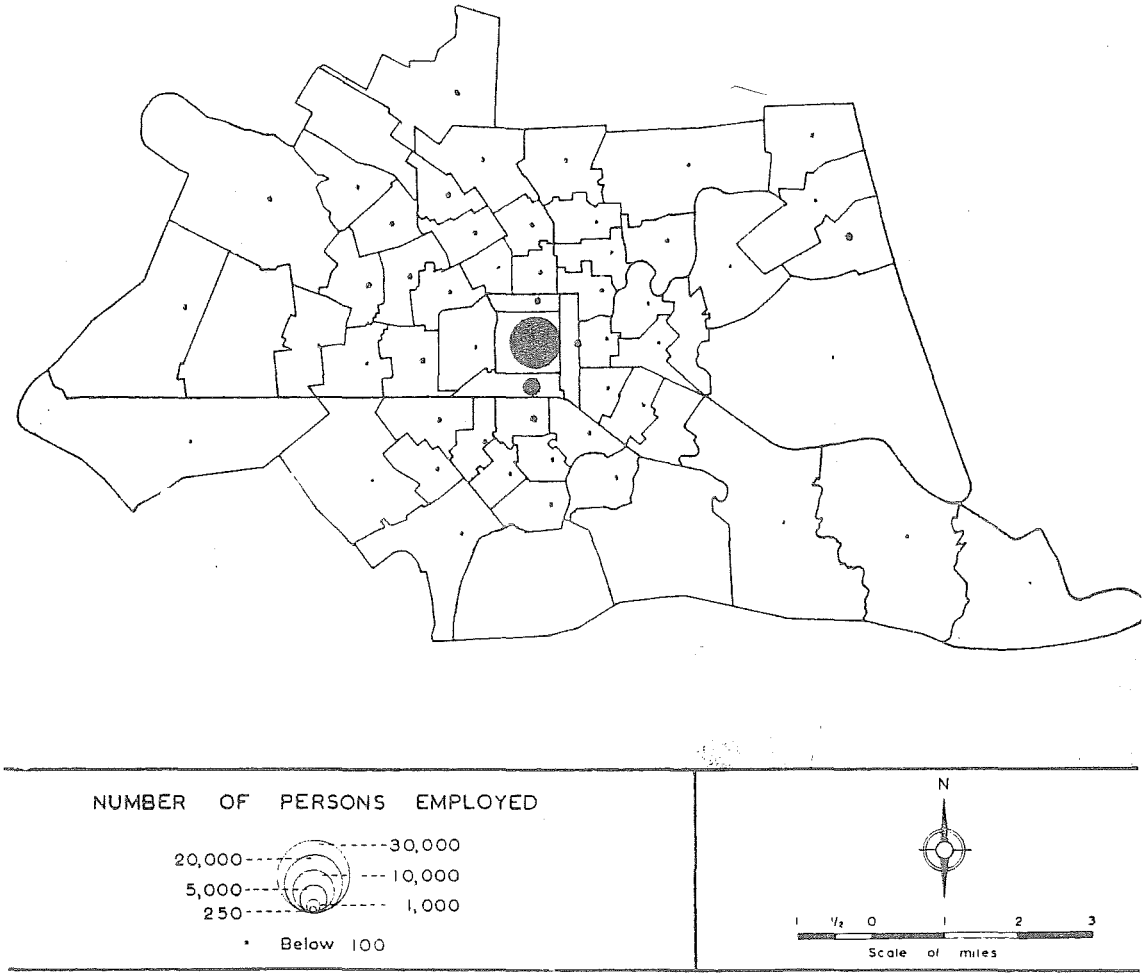

FIG. 3.1 COMMERCIAL EMPLOYMENT : 1959

Source: W. Johnston (1965).

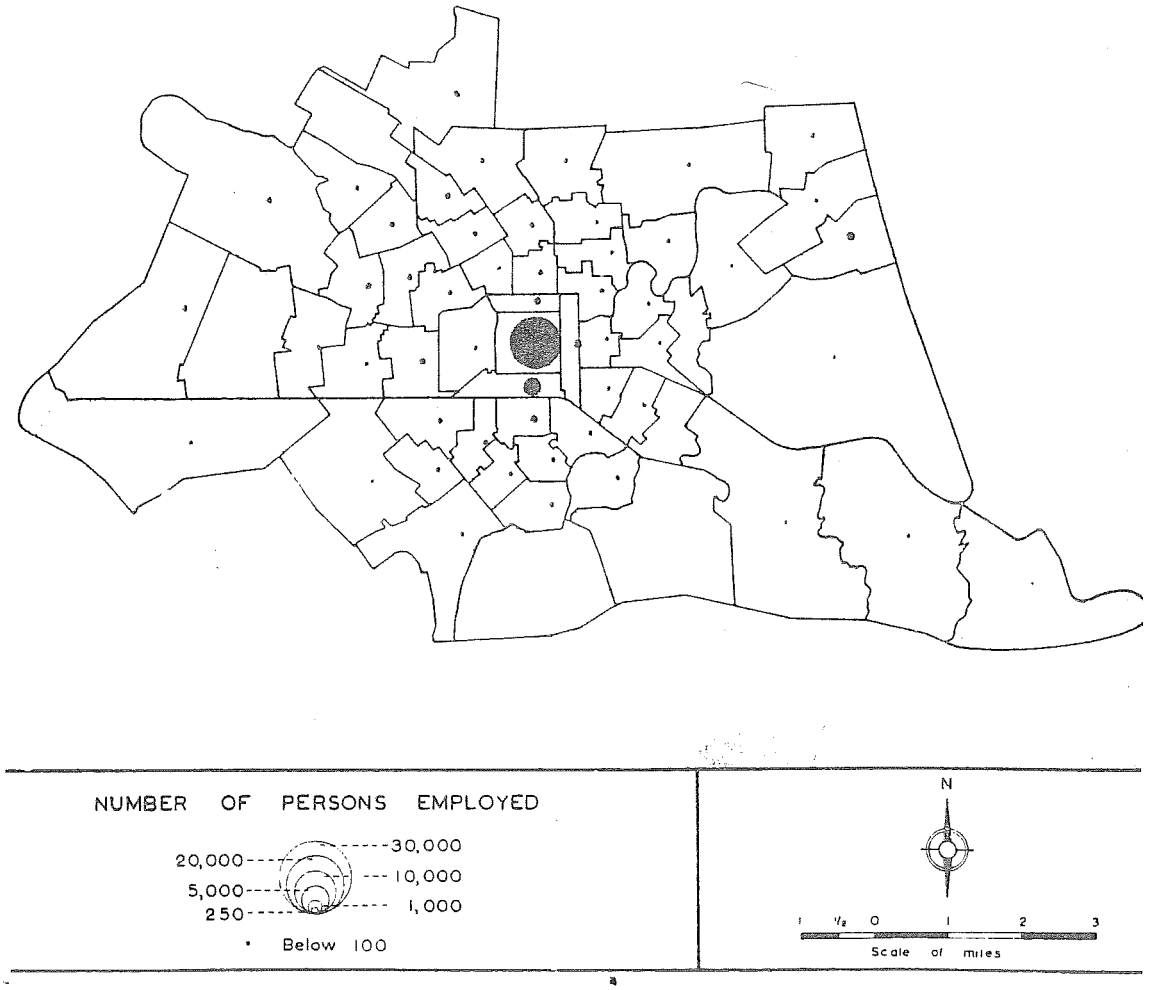

FIG. 3.1 COMMERCIAL EMPLOYMENT : 1959

Source: W. Johnston (1965).

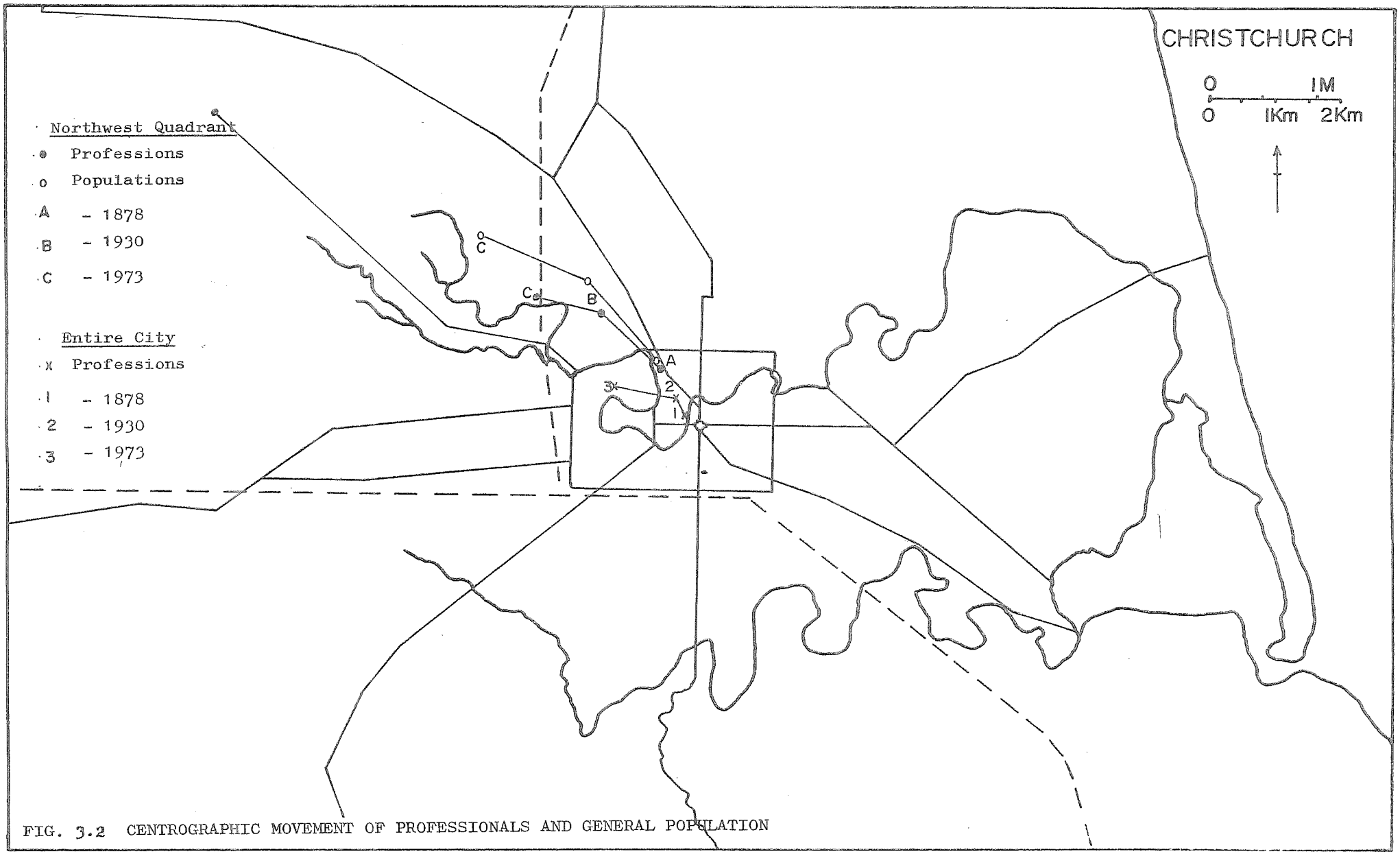

FIG. 3.2 CENTROGRAPHIC MOVEMENT OF PROFESSIONALS AND GENERAL POPULATION

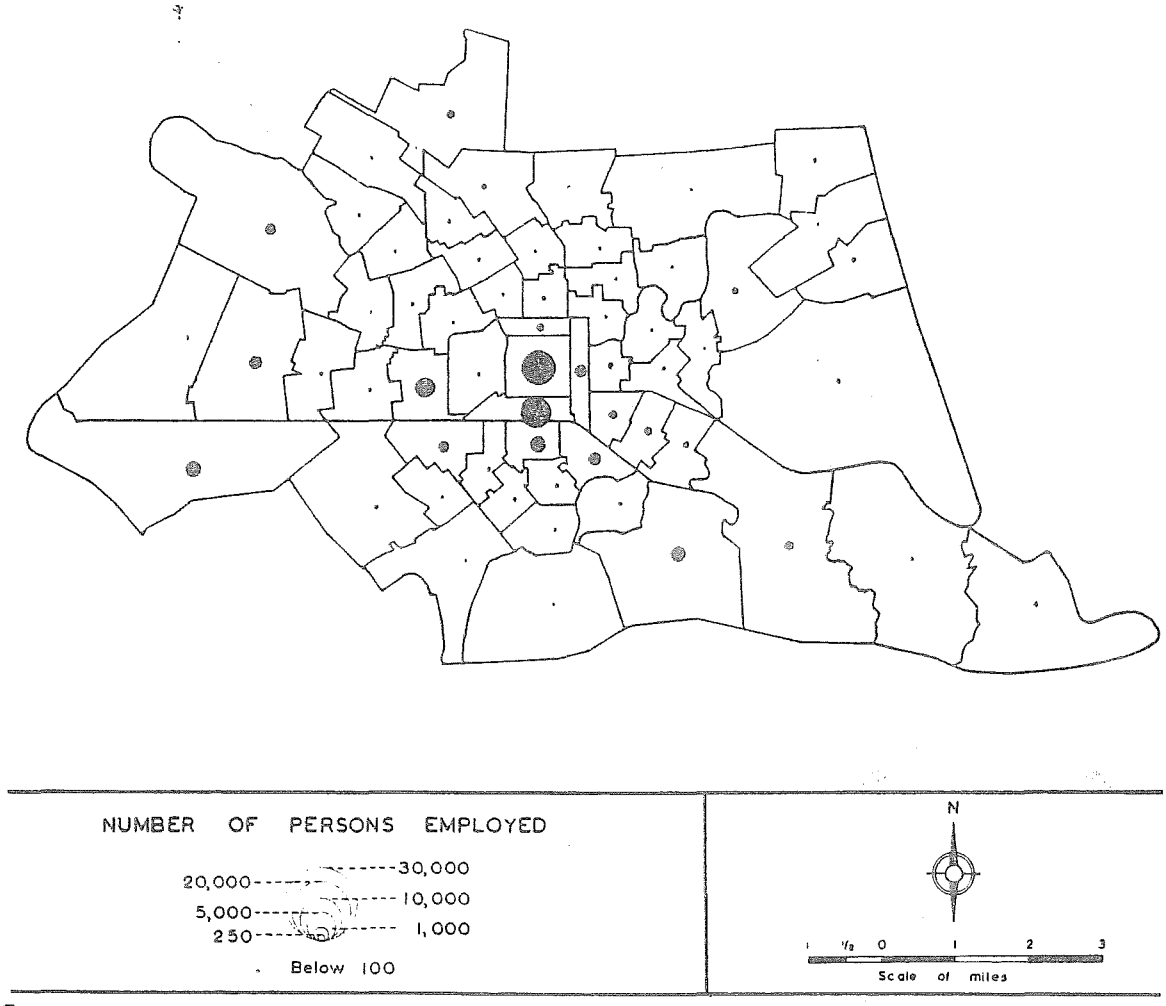

FIG. 3.3 INDUSTRIAL EMPLOYMENT: 1959

Source: W. Johnston (1965).

Outward expansion of the high status area in the northwest, failed to keep pace with the general population growth during the second time period of 1930-73. High status area growth was marked by consolidation of the existing pattern, accompanied by a gradual decline on the inner areas and expansion on the outer. Fashionable areas began to lose their peripheral contact, due rather to the significantly greater than average rate of middle class population growth in this quadrant, than to the slow outward growth rate of the elite areas (Appendix C: Figs.11, 13, 17, 19). The rates of increase were equal, if not higher, in the northwest, as elsewhere in the city (Appendix C: Fig. 19). This point is illustrated by the relative location of the centro as seen in Figure 3.2.

The relationship between population change and high status area change observed here raises certain doubts relating to some aspects of urban theory. Hoyt (1939), identified the 'elite' as the leaders of social area change, thus, the rate of change in the high status areas should be greater than the general population, with the spatial implications being the dominance of axial growth, therefore, the high status should move outward, faster than the general population within a certain sector, with the lower socio-economic groups following. This should have been observed, even though Hoyt used high rental areas to identify the social leaders, whereas selected professional groups, not considering the business elite, was used in this study.

(b) Direction of Change

Hoyt (1939) predicted outward movement of the high status within a sector, the direction being sustained for long periods. In Christchurch, the presence of Hagley Park immediately to the west of the commercial centre, has disrupted the natural outward progression of residential growth. The movement of the elite areas therefore, although moving outward within the northwest sector, in broad terms followed the outline of the Park. Concentrations of high status areas spread along Park Terrace, Merivale, Western St Albans and both sides of Papanui Road, extending north as far as St Andrews College. Movement also extended westward from Merivale along Fendalton Road.

This basic direction of movement took place before the inter-war period, after which the direction of movement continued in a generally westward direction, creating new high status neighbourhoods in outer Fendalton, Ilam and more recently Avonhead. Movement along Papanui Road came to a halt, likewise the movement within Fendalton failed to move north, although geographically, this would have represented outward growth (Fig. 3.2).

(c) Speed of Change

In Classical theory, the spread of outward movement of the elite areas is closely linked with general population increase, but, the experience of Christchurch suggests that qualification is necessary. From 1850 to 1930, a period of 80 years, the population increase was126,000, but from 1930

to 1971, a period of only 40 years, the increase in population was 150,000. The mean centre of the high status area in the northwest quadrant[1] failed to keep pace with population growth between 1878-1930 and 1930-73, but especially the latter when the rate of outward high status growth slowed while population growth increased (Fig. 3.2).

(d) Continuity of Change

Having established a high status sector, Hoyt (1939) predicted that outward growth would be fairly continuous, both spatially and temporarily, provided there was a continuous population increase. Amato (1969, 70) in a study of Latin American cities, observed however discontinuity in both. High status areas would form and consolidate, then be threatened and surrounded by middle class neighbourhoods, causing the elite within a short period of time to abandon these areas and establish another elite area within the same general sector, but beyond the middle class areas. Amato (1969, 70) described this as a process of high status 'leap-frogging'.

The historical background of Christchurch suggests a compromise between the observations by Hoyt (1939) and Amato (1969, 70). Marked variation in the rate of spatial movement through time has already been observed, but the 'lepa frogging'

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(1) Identified by measuring the distance between the centrographic points between the relevant periods.

pattern observed by Amato (1969, 70) was not evident. The population growth rate of Christchurch is considerably lower than that of the South American cities, thus the processes of change is also slower. The elite areas in the northwest are surrounded by lower status areas, thus causing some doubt as to the ultimate response of the elite. The study of processes in Chapter 4 illustrates the absorbative capacity of the northwest, therefore the leap frog process described by Amato (1969, 70) may not be necessary for sometime in the future.

3.2 HIGH STATUS AREA CHANGE: the model and reality

(a) A Theoretical Explanation

Hoyt (1939)suggests nine causal forces which he thought were responsible for the shaping of the characteristic of high status area movement. In explanation of the observed characteristics of change will be attempted, within the framework of those nine points.

(i) "High-grade residential growth tends to proceed from the given point of origin along lines of travel or towards another existing nucleus of buildings or trading areas". (Hoyt 1939, 117).

Hoyt (1939) unfortunately, was not specific regarding either the stage in a city's history or the city's size, when the "given point of origin" is to be identified. The early pattern of high status areas identified in Christchurch (1878)

was essentially concentric; but this may not invalidate the hypothesis, since the city may have been too small (less than 20,000) to be considered a city in the context of Hoyt's model. Evidence of disintegration of the zone was evident by the turn of the century, especially north and south of the commercial centre, with the elite already extending into Merivale, St Albans and Papnui, so that by the time a sector pattern was evident, it was no longer confined to the point of origin.

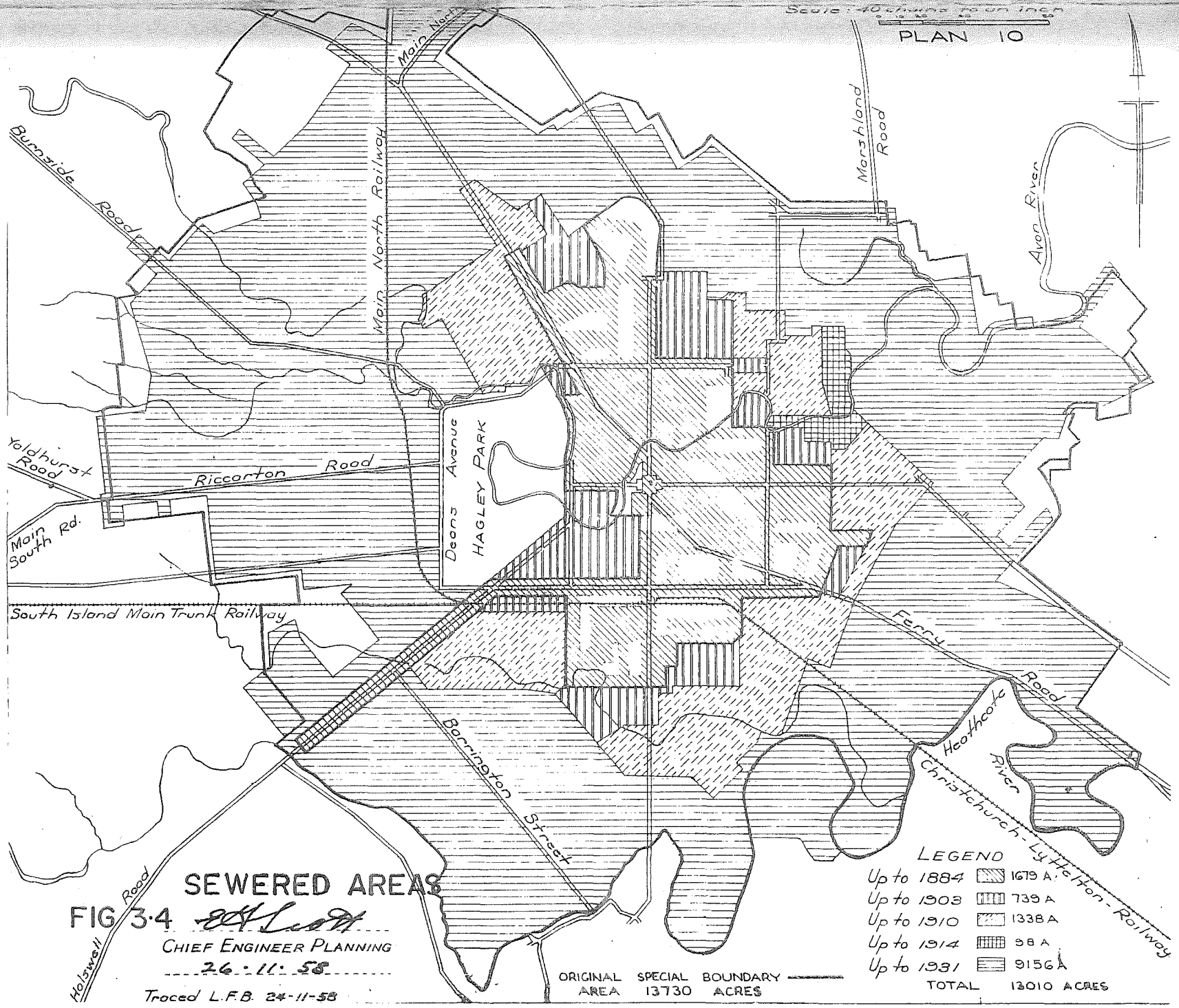
The established lines of travel and the presence of the existing nuclei appears to have been important, with the early pattern of residential growth being one of a widely scattered nuclei of settlement along established routes out from the city centre. Many of these nucleated settlements formed the centres for later suburban formation and growth. The early movements of the high status, was adjacent to the main tram-routes, especially along Victoria and Papanui Roads, and towards the Merivale, St Albans and Papnui shopping centres. Between approximately 1920-50, the movement followed the tram route through Merivale and along Fendalton Road (Fig. 2.5). The importance of public transport wained however, around 1950, as the private car became more widely used, thus this period became characterised by the interstatial infilling due to the expansion of areas away from main tram routes.

(ii) "The zone of high rent tends towards high ground which is free from the risk if floods and to spread along lake, bay, river and ocean points, when such water fronts are not used for industry". (Hoyt 1939,117)

Earlier study has indicated that there are significant variations in the physical environment of Christchurch, but the question arises as to the impact of these variations on the high status growth. In Figure 2.4, the presence of four basic sources of variations is indicated; i.e. elevation, drainage/flooding, soils and river/water frontage. In many cases, these variables are interconnected, but an attempt will be made to define the relationship between each of these features and the characteristics of high status area change.

(1) Elevation: A clear distinction in relief between the hills to the south and the wide expanse of the plain is evident. Development of the high status residential areas of the Port Hills was delayed for two reasons. The hills could only be reached from the Square by traversing several miles of bog-land, thus a more central location was desirable before the introduction of public transport. With the turn of the century, the Sydenham tramway was extended to the foot of Dyers Pass Road. Although land had previously been made available for subdivision with the sale of J.C. Wilson's extensive estate in 1881, building on the hills began only after the extension of that tram route. In 1912, the Barrington Street tramline was extended around the foot of the hills and construction began on the Hackthorne Road extension, so that by 1930 a significant high status neighbourhood was forming. Instrumental also in slowing the rate of growth was the absence of sewer connections until after the 1930's (Fig. 3.4).

PLAN 10



SEWERED AREAS

FIG 3·4 ~~E.H. Leach~~

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Hillside locations have been sought be the elite for numerous reasons, the most obvious perhaps is the desire for the view and to a lesser degree the wish to live above the smog level of the city. Building costs are significantly greater, thus prohibiting many prospective home builders of lesser means. Land prices are increased by the great demand for hill locations as the elite actively attempt to gain privacy and segregate themselves from others. On the flat the middle classes are building beyond and around the elite areas, whereas the hills provide an added security due to the land and particularly the building costs.

On the plains, elevation plays a different but equally crucial role, particularly in its affect on drainage and flooding.

(2) Flooding and Drainage: With the exception of the 100' contour line that passes almost N - S along the western fringe beyond the airport, the entire area of Christchurch is less than 100 feet above sea level, in fact the majority is less than 50 feet above sea level (Fig. 2.4). Due to the low elevation above sea level, difficulty in obtaining a relief map showing time elevation hights was experienced - the only maps available were those undertaken by the Drainage Board, which only showed spot heights throughout the city. A selection was obtained to provide the basis for a contour map of the areas relevant to the early settlement (Figure 3.5). The general trend was east-west; a general downward slope towards the sea. Important local

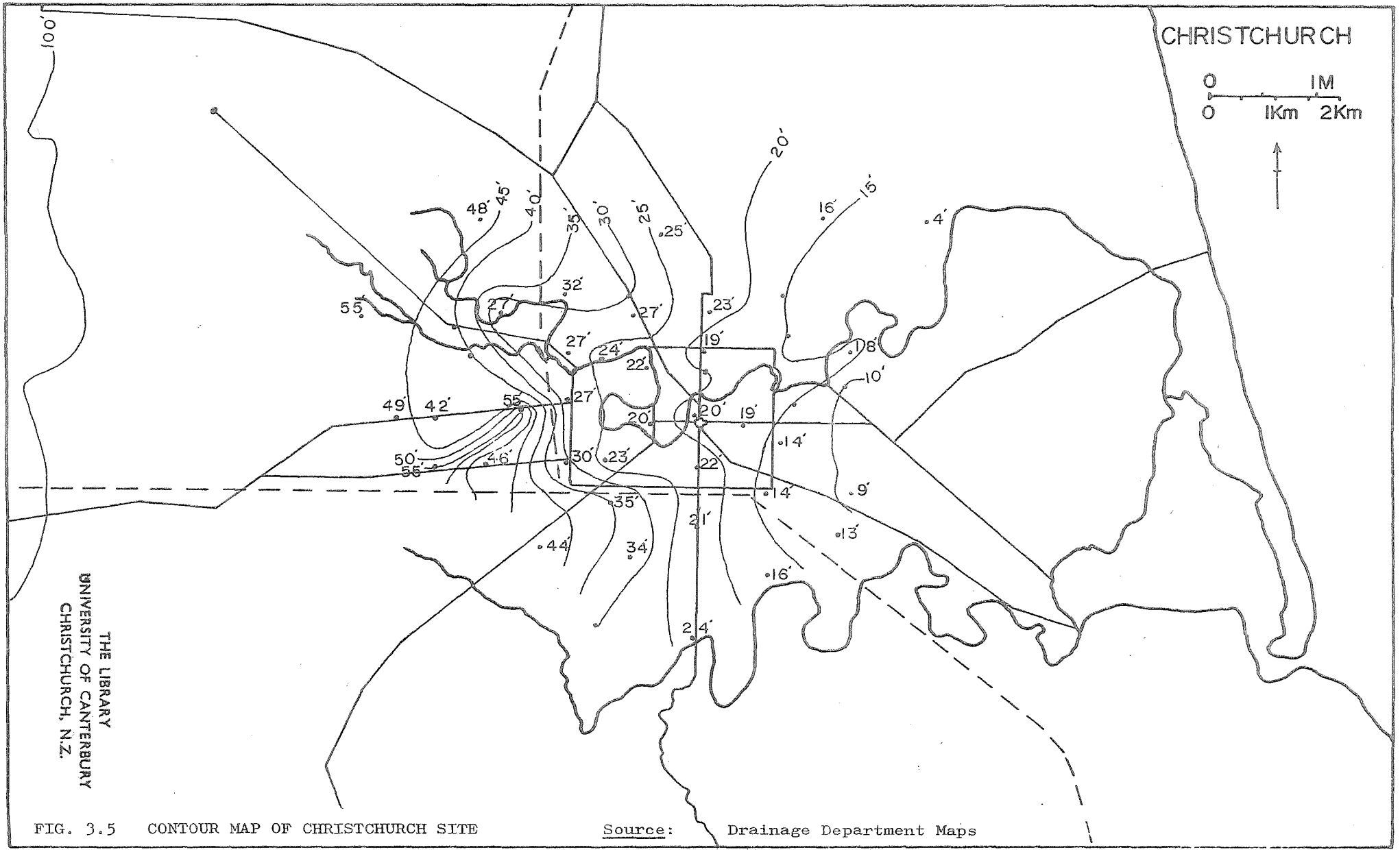


FIG. 3.5 CONTOUR MAP OF CHRISTCHURCH SITE Source: Drainage Department Maps

variations were noted, for example the projection of elevated land into Riccarton; or the depression extending in the direction of the course of the Avon River, even though the northwest is on generally elevated land. The map indicates that the area east of the Square is less than 20 feet above sea level, with Woolston, Opawa and Linwood less than 15 feet above. Another point of interest is that much of Fendalton and Merivale is no higher than a large part of Spreydon; this means that any attempt to establish a causal link between elevation on the plain and the location of 'fashionable' areas, must be accompanied by some qualification.

The low magnitude of elevation is appreciated when it is realised that there is only a 20 foot increase from the Sqaure to the corner of Fendalton Road and Memorial Avenue; or that essentially St Albans' shopping centre in the north is on an equal par with that of the Beckenham shopping centre.

The real importance of the slight elevation differences evident in Christchurch, only become evident when related to the drainage and flooding problems. The city site was chosen by Captain J. Thams, with the consent of the New Zealand Governor - Grey and the Anglican Bishop of New Zealand - Selwyn, on behalf of the Canterbury Association. Thomas' report stressed the advantages:

> "the site for the new town was on one of the streams, the Avon, which would be a valuable asset as a means of direct communication between the million or more acres of plain and the sea (Bruce, 1932).

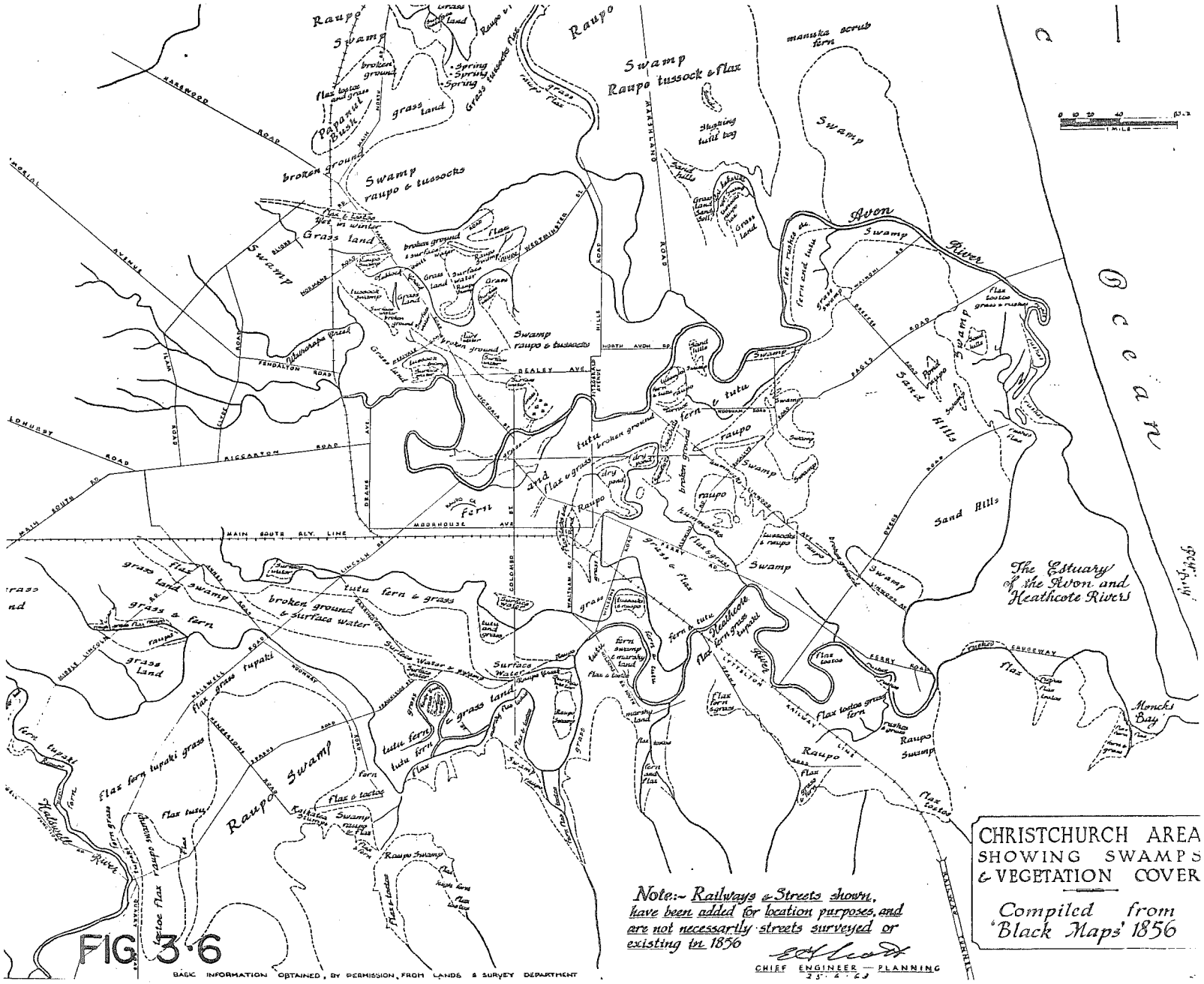
However, many of the early settlers testify in their biographies that the site was far from perfect.....

> "a large expanse of plain dotted here and there with Ti palms, quantities of tutu and fern, gullies, creeks and swamps all around....." (Innes 1879, 20).

C. Ward, in his book 'The Town of Christchurch' of December 1857 and quoted by Morrison (1948, 10) says:

> "Oh! The town of Christchurch
> is an elegant mixture
> Of roads and pasture
> And swamps and sand...."

The land surveyed for the town consisted mainly of swamps and bogs or the drier land closer to the sea which was sand dunes. Figure 3.6 shows the areas of swamp. Much of the land within the four belts appeared to be swamp free except for an area north of the River in the NE and an area in the SE corner. Residential development initially began within the four streets - i.e. Barbadoes, St Asaphs, Antigua and Salisbury Streets. Five years after the founding, the reserve land of Bealey Avenue, Fitzgerald Avenue, Moorhouse Avenue, Park Terrace/Rolleston Avenue/ Hagley Avenue, which was beyond the original four belts, were opened for residential use. The location of the first settlers may reflect the most desirable areas. These areas were selected in the first two land ballots by those who had purchased land rights before leaving England. River locations, the importance of closeness to the major routes, a central location and the avoidance of swampy areas seem to be the four major factors that dominated



CHRISTCHURCH AREA
SHOWING SWAMPS
& VEGETATION COVER

Compiled from 'Black Maps' 1856

Note:- Railways & Streets shown, have been added for location purposes, and are not necessarily streets surveyed or existing in 1856

E. C. Lord
CHIEF ENGINEER — PLANNING
25.4.63

FIG 3.6

BASIC INFORMATION OBTAINED, BY PERMISSION, FROM LANDS & SURVEY DEPARTMENT

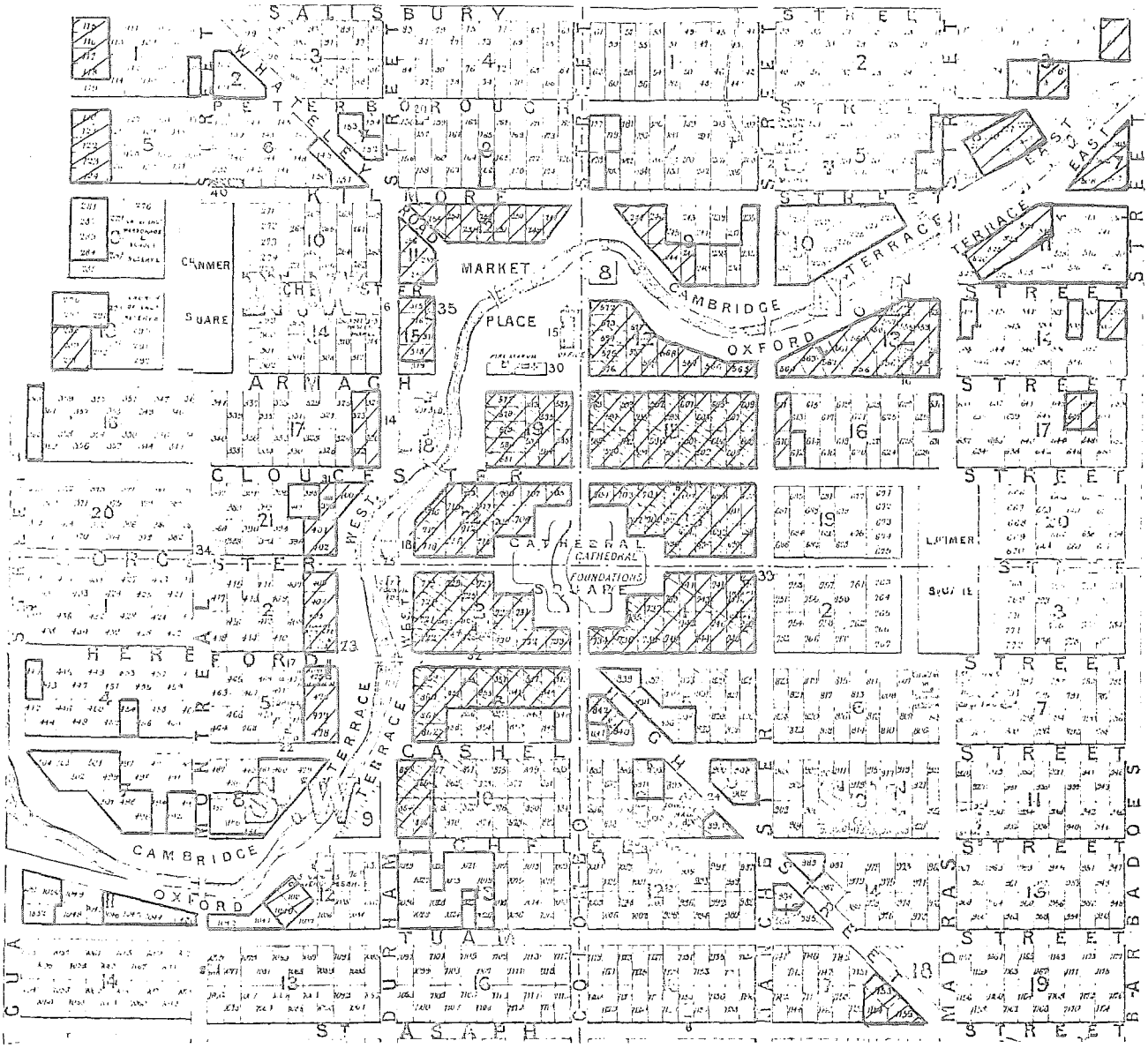
their choices (Fig. 3.7).

Illustrated in Figure 3.8 is the swamps, raupo or surface water cornering large areas, in roughly a crescent shape around the central area in the 1850's. In 1866, the residential area followed the main route ways, in patches generally avoiding swampy areas.

Although numerous streams, rivers, and gullies served as part of the natural drainage, the widespread existence of swamps testified to the inefficiency of the system. The first drains to be built were west of Antigua Street, draining south into the river; west of the north end of Madras Street; north of the east end of Salisbury Street draining the northeastern section of the city; and the fourth to the west of the east belt flowing towards the river draining Bigsland (Morrison 1948). As in the 1880's, most of the high status lived within the main belts, they benefitted from the efforts to improve drainage. Areas out of the city boundaries made little progress - Sydenham faced severe problems in the 1870's and 1880's.

> "Stagnant water in the streets and swamps into which refuse was dumped, open ditches into which house drains were running, ditches blocked by bridges carelessly built - these were all too familiar features of the district" (Morrison 1948, 67).

Polluted water supplies resulted in frequent typhoid epidemics.



FIRST DRAW

SECOND DRAW

FIG. 3.7 FIRST TOWN SECTIONS PURCHASED: 1950

Swamps and poor drainage problem in many of the outer suburban areas were deterants to those who could live in the central area,[1] therefore in 1878 even though a large proportion of the population lived in suburban areas - 72% (Appendix C: Fig. 4) and the majority of professionals lived within the city area (Fig. 2.13). Efforts to improve the drainage, resulted in the lowering of the water table below the land surface in most areas. Two sources of flooding in Christchurch exists - the greatest being of surface water drainage, and to a lesser degree, that of stream and river overflow; so despite the lowered water table and extensive drainage system, the low lying areas of Woolston, Opawa, Linwood and St Albans are regularly flooded. River overflow, with their widespread network of tributancy, was and still is, a problem to even the higher land of the northwest.

(3) Soils: Peat and clay-pug soils (Fig. 3.9) are generally associated with swampy and poorly drained areas, the distribution and deterrant factors of these districts have already been discussed. There were also extensive sand belts to the north, east and south of the central area which represented successive positions of the retreating shoreline. The sand dune ridges of Wainoni, Burwood, Linwood and Bromley in particular, was responsible for the low rate of development and sparse population until well into the present century. The gravel of the Waimakariri river spread out to form two broad single fans, one in the northwest and the other extending through Addington, Spreydon and parts of Sydenham. The

(1) See Figure 3.8.

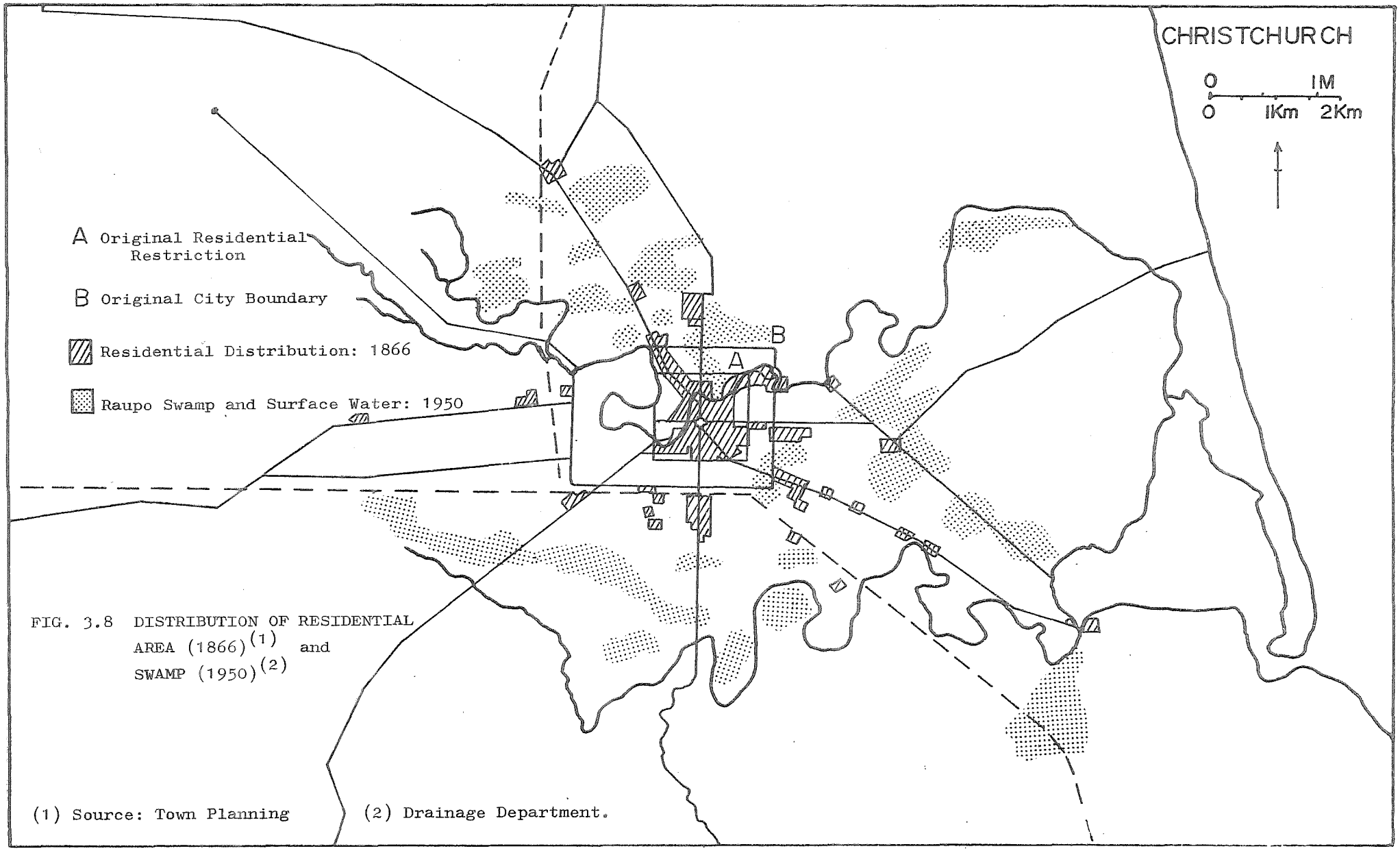


FIG. 3.8 DISTRIBUTION OF RESIDENTIAL AREA (1866)[1] and SWAMP (1950)[2]

(1) Source: Town Planning (2) Drainage Department.

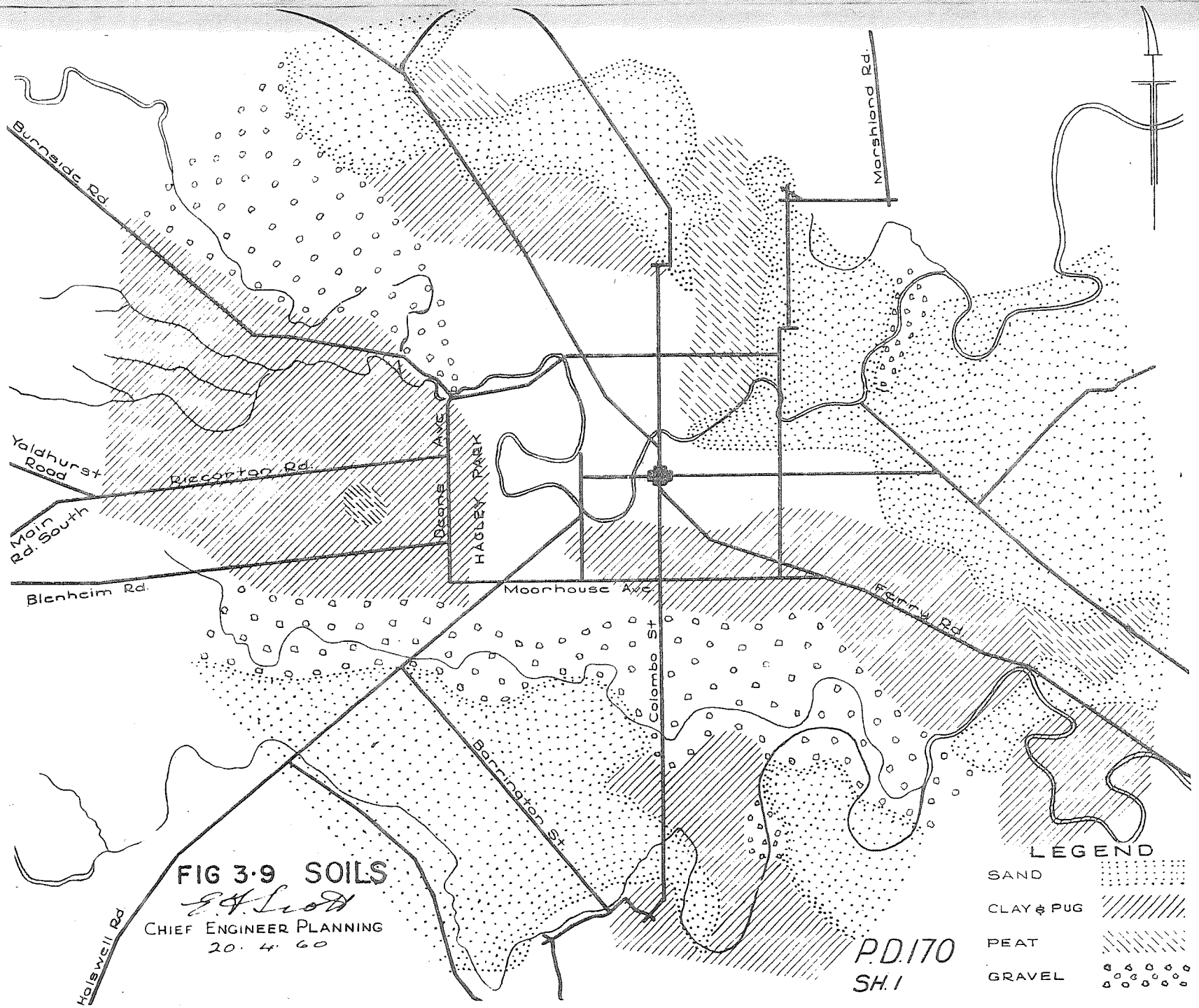


FIG 3·9 SOILS

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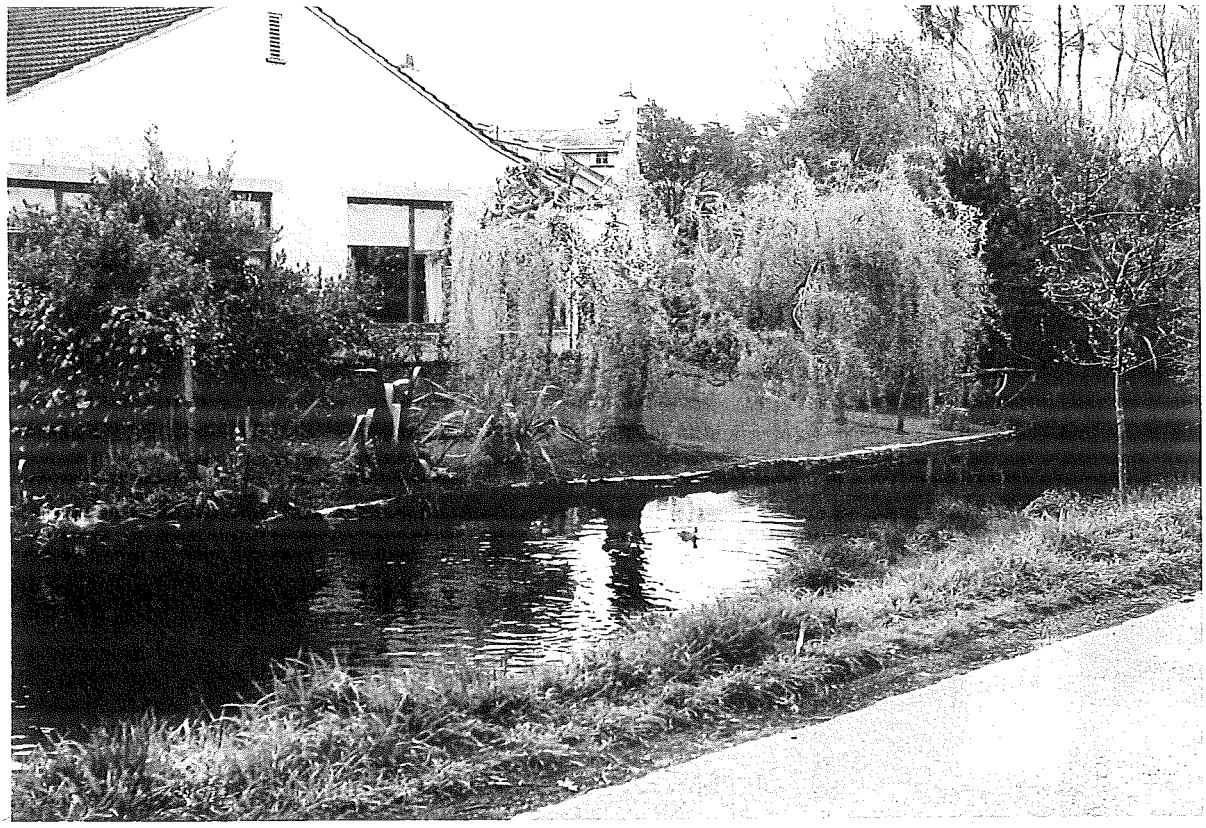


PLATE 1: An example of stream frontage in the northwest - Wairarapa Tce.

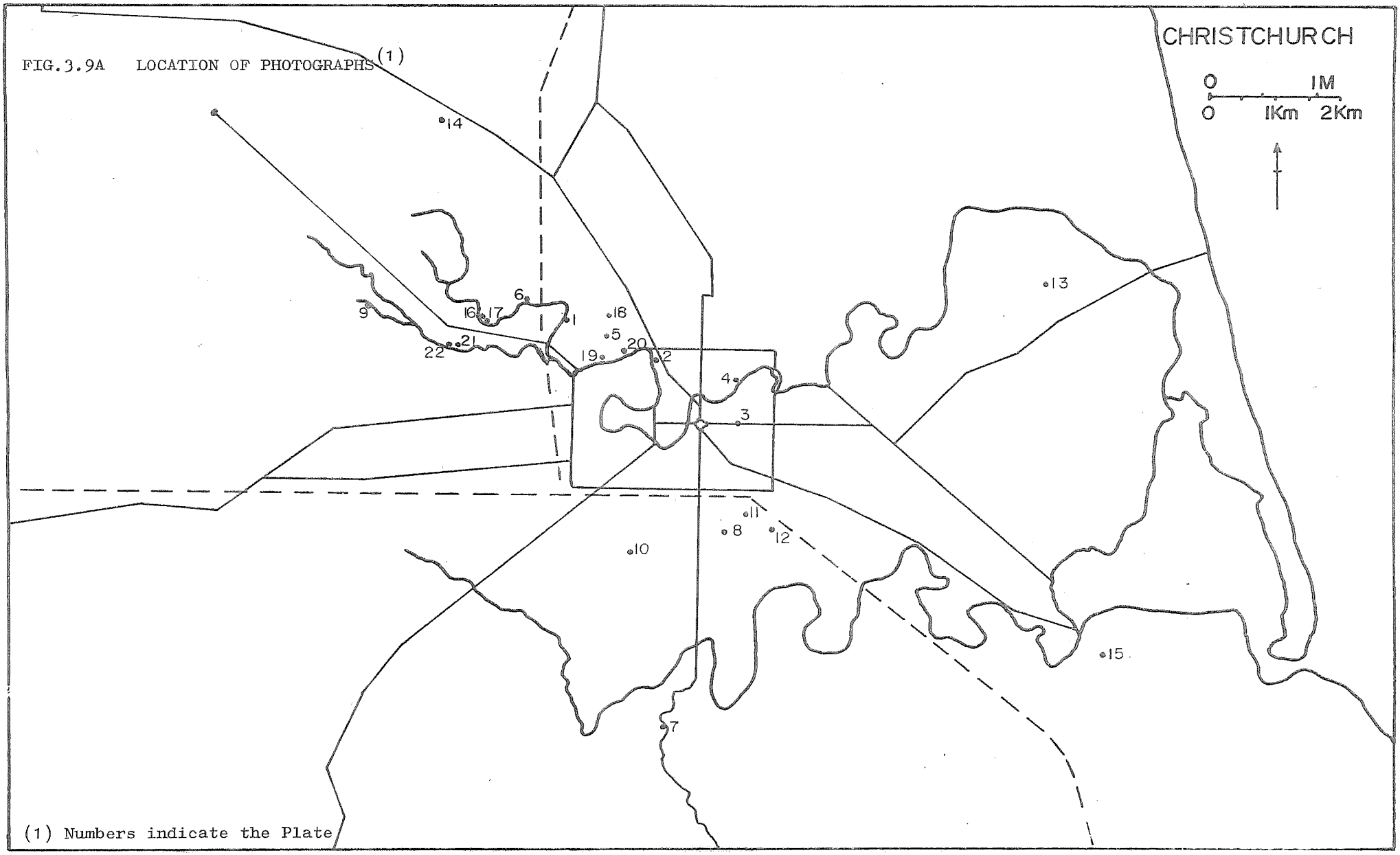
fashionable suburbs of Merivale and Fendalton were built on the former, and industrial development took place on the latter. There are obvious advantages to both forms of land use, particularly as the gravels are well drained and of generally higher elevation thus providing areas relatively free from flooding and firm foundations.

(4) Water Frontage: River and stream frontage was in great demand, as it is now, despite the occasional flooding problems existing. Cimmercial expansion forced many of the elite to move outward, generally north along Papanui Road, with many being forced to abandon river location in the central area, thus for a period of time the high status area was isolated from the rivers. In the 1920's and 30's, growth expansion through Merivale and into Fendalton, once again provided the development opportunities of river frontages. The complex network of streams in the northwest (Fig. 3.6) is one of the physical features responsible for the high status attraction, and it is often stated that a river frontage automatically adds $ 5,000 to a property value (Plate 1).(1)

The water frontages elsewhere in Christchurch, although not used for industry or port facilities have failed to attract large numbers of the high status, with the long Brighton coast being settled by the middle class or as beach holiday homes. Sumner, an area of cliffs and hills following the coast from the estuary around to Scarborough, has become the location for a significant number of elite, and enjoys a higher status classification.

(1) For location see Figure 3.9A.

FIG.3.9A LOCATION OF PHOTOGRAPHS (1)



(1) Numbers indicate the Plate

(iii) "High-rent residential districts tend to grow towards the section of the city which has free open country beyond the edges and away from 'dead-end' sections which are limited by natural or artificial barriers to expansion" (Hoyt 1939, 117).

Initially the presence of Hagley Park in the west of the commercial area, represented a barrier to the expansion of the elite area in that direction, causing the elite to expand northward into free and open land in Merivale and Fendalton. Northward progression along Papanui Road was halted by competition from the lower housing developments, and with the area to the east being middle class, the movement of the elite was therefore deflected westward into open land.

However, in the last few decades, the free and open land beyond in the northwest, has been taken up by the middle class housing with only scattered areas of elite, thus the experience of the elite has been one of alteration from restriction to open expansion to restriction once again; originally a problem of physical attributes, but now one of social characteristics. There now appears to be little attempt to establish contact with open land, as the existing elite areas appear to be absorbing the natural increase. Continuation of this situation, one of development and consolidation on the periphery by the middle class, may force the outward expansion of the elite to leap-frog over the middle classes (Amato 1969; 1970). However, it is unlikely that this expansion will be directly outward along the direction of Memorial Avenue, since in order

to go beyond the existing residnetial areas they would be forced towards the airport, where residential development is restricted, and from a residential point of view undesirable due to the noise factor.

(iv) "The higher-priced residential neighbourhoods tend to grow towards the homes of the leaders of the community" (Hoyt 1939, 117).

Following the formation of a dominant single high status area in the northwest, it has become difficult to identify the importance of the community leaders, as the leaders of the community are the members of the elite, and tend to always select residences in or close to the fashionable neighbourhood. This intimate relationship makes it difficult to separate the causes or results. However, it is true that particularly in the 19th century period of Christchurch's development, there was no clear distinction between built up residential suburbs and the surrounding rural lands as many of the leaders in society selected or built "gentlemen's residences" on a few acres of farm land amongst orchards and gardens. Clearly, here to, these leaders were not living within fashionable areas, or associated with a suburb, but their presence on the fringes of residential areas may have served to attract other elite to these locations.

In many cases the embryonic elite area later either disintegrated or was absorbed by lower social neighbourhood growth, and many examples may be cited. For example on Lincoln Road, W.S. Moorhouse, a prominent farmer, politician

and for a time Provincial Superintendent, established a farm bearing the name of the suburban area of Spreydon, which later grew around it. Prominent absentee land owners, such as Captain Simeon and Hon S. Lyttelton, possessed large estates south of Lincoln Road.

W.G. Brittan, Sir T. Tancred, E.C.J. Stevens and G. Bowron, prominent settlers brought large estates in the Avonside-Richmond area in the late 1850's. By 1858, there were sufficient well to do living in the area to form a local cricket club, with boating and picnic trips being held on the Avon, but these attractions for most of the elite, were outweighed by the wide expansion of flax and raupo swamps (Morrison 1949).

The first settlers in Opawa, were small numbers of comparatively wealthy English families who established farms and built the grand homesteads. The Hon E. Richardson and Sir T. Tancred, bought estates; Hon W. Reeves built 'Risingholme' and E.S. Harley 'The Grange'. A nucleus of elite centred around the corner of Opawa and Locarno Street, where Bishop Selwyn laid the foundation stone of St Marks in 1865, but once again these elite were later to be surrounded by the overflow of workers from the neighbouring suburbs of Woolston, Linwood and Sydenham.

In the late 1860's and 70's, Sydenham, was a boom town following the introduction of the railway. Land south of the

southbelt was auctioned in 1861, and many thought the area would develop into a fashionable neighbourhood, for example, Sir T. Tancred built a beautiful home in exclusive grounds fronting onto Antigua Street; while Reece and Harman built homesteads in Sydenham. However, the inlfux of factory and railway workers quickly transformed the area into a 'Railway Town'.

(v) "Trends of movement of office buildings, banks and stores (sometimes) pull the high-priced residential neighbourhoods in the same direction" (Hoyt 1939, 118).

As it is stated, this assertion appears to have little relevance to the movement of the high status areas in Christchurch. Although it is true that in the first few decades, numerous nuclei of shopping or commercial centres sprang up along the major route ways, leading out from Christchurch, and subsequent residential development transformed these into suburbs, however the role of these commercial centres in influencing the direction of elite growth is difficult to establish.

Nevertheless, commercial development in conjunction with industrial development was instrumental in shaping the nature of high status change. Initially the elite dominated the inner areas of the original city. Commercial and industrial expansion encroached on residential areas in certain sectors, with the first area affected being that of the immediate areas south and southeast, along Colombo Street, High Street and later Ferry Road. The original concentric like pattern was

halved by commercial and industrial expansion, thus by 1930, the only two remaining areas of the central city were; the strips flanking the eastern edge of Hagley Park north of Oxford Terrace, which was two or three blocks in depth; and a core of elite centred on Cranmer Square. Commercial and industrial expansion had least impact on the western side (Fig. 2.14), thus even today, most of the area between the river and Hagley Park has retained its residential status. Figure 3.10 indicates this spatial imbalance. Note that the elite sector has formed in the commercial side of the C.B.D., and away from the industrial area.

(vi) "High-grade residential areas tend to develop along the fastest existing transport lines" (Hoyt 1939, 118).

Difficulties were found when trying to gauge the influence of this assertion, as transport means spread out in most directions from the city centre, with equal efficiency. Road transport was extremely difficult before the advent of the comprehensive tram service. Before the introduction of the tramways, the quickest means of transport was the horse, but this was restricted in many areas, especially during winter as the peaty swampy undersurface became obvious. For the high status areas of the north, Papanui Road was the main avenue for movement. The poor conditions of suburban roads, in the first few decades was a deterrant to the elite. Crosbie Ward (1856) describes numerous accounts of accidents in the bogholes and quagmires. A bullockteam, dray and load was reported to have sank out of sight on one occasion, and it was said that it was often easier to float logs down the ditches

than to haul them[1].

With particular reference to the elite, most of the outward movement of population was delayed until the 1880's and 90's, when the tramway network was established. One of the first and principle lines ran along Papanui Road, with extension of the lines moving through Merivale to Fendalton. This provided cheap and rapid transport between the home and the workplace, until the introduction of the motor car.

The motor car had a three fold effect; greater residential locational freedom, greater flexibility in work time schedule, and a preference for job location. The first to benefit, were the elite, and they extended their residential development away from the main tram routes.

There is a further consideration - Christchurch is only a small to moderate sized city, founded on a featureless plain with few obstructions to transport. The close proximity of the suburbs to the central area, allows a large option for transport routes, even today few suburbs are more than four or five miles from the Square. To illustrate this, one need only point to the popularity of the bicycle, with Christchurch often being referred to as the 'city on wheels': bicycle wheels.

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(1) C. Ward "The Struggle of Papanui", Nov. 1856 quoted in Morrison (1948) p. 18.

Statements of "five minutes cycle ride from the Square", were frequently included in newspaper property advertisements during the 1920's and 30's. The peak of popularity was probably during the 1950's; in 1959, 25% of all travel within the city as a whole, and 30% for a distance up to 2 miles from the Square was either by power or pedal cycle (Table 2.6). With the increasing popularity of the motor car during the next decade, there was an obvious decline in the use of the bicycle; however to a certain extent, the bicycle has always been popular with the elite, and even today, business and professional people may be seen cycling through Hagley Park to work. Thus the special character of Christchurch, and the general changes in transport trends has diminsihed the relevance of rapid transit, and therefore does not play the same role as in many of the North American cities as outlined by Hoyt (1939).

(vii) "The growth of high rent neighbourhoods continues in the same direction for a long period of time" (Hoyt 1939, 118).

The general movement of high status areas has been outward, although, early analysis has shown that there has been a variation in both the role and direction, as discussed in Section 3.1(b). The migration study showed that the years 1930-40, was a period of retrenchment and consolidation, therefore this assertion has only been partially fulfilled.

(viii) "De luxe apartment areas tend to be established near the business centre in old residential areas" (Hoyt 1939, 118).

This point is more relevantly discussed in Section 4.5A(iii); and it is perhaps sufficient to say that there was some evidence that the assertion outlined is partly true for Christchurch, with the establishment of high rise luxury apartment buildings in the northwest.

(ix) "Real estate promoters may bend the direction of high grade residential growth" (Hoyt 1939, 118).

This may have occurred in some cases, certainly large land owners and speculators could regulate the direction and nature of residential subdivision, others may have resisted the pressures for subdivision thus restricting development, thus in general, property owners probably do influence the pattern. For example, the whole area south of the south Town Belt (Sydenham) was not made available for residential development until the sale by Moorhouse in 1861. Likewise Wilson's large estate in Cashmere was not residentially subdivided until 1881. The Church also held large areas of land as endowments, which in many cases remained intact, thus altering the pattern of development.

The question remains however, of the impact on the direction of high status growth. The fact that Fendalton was held by a small number of large property owners for a long time, may have retarded extensive residential growth in this area until after the 1930's, but the presence of farming also had a further significant effect. Land, reasonably close to the city centre, with a desirable natural environment was

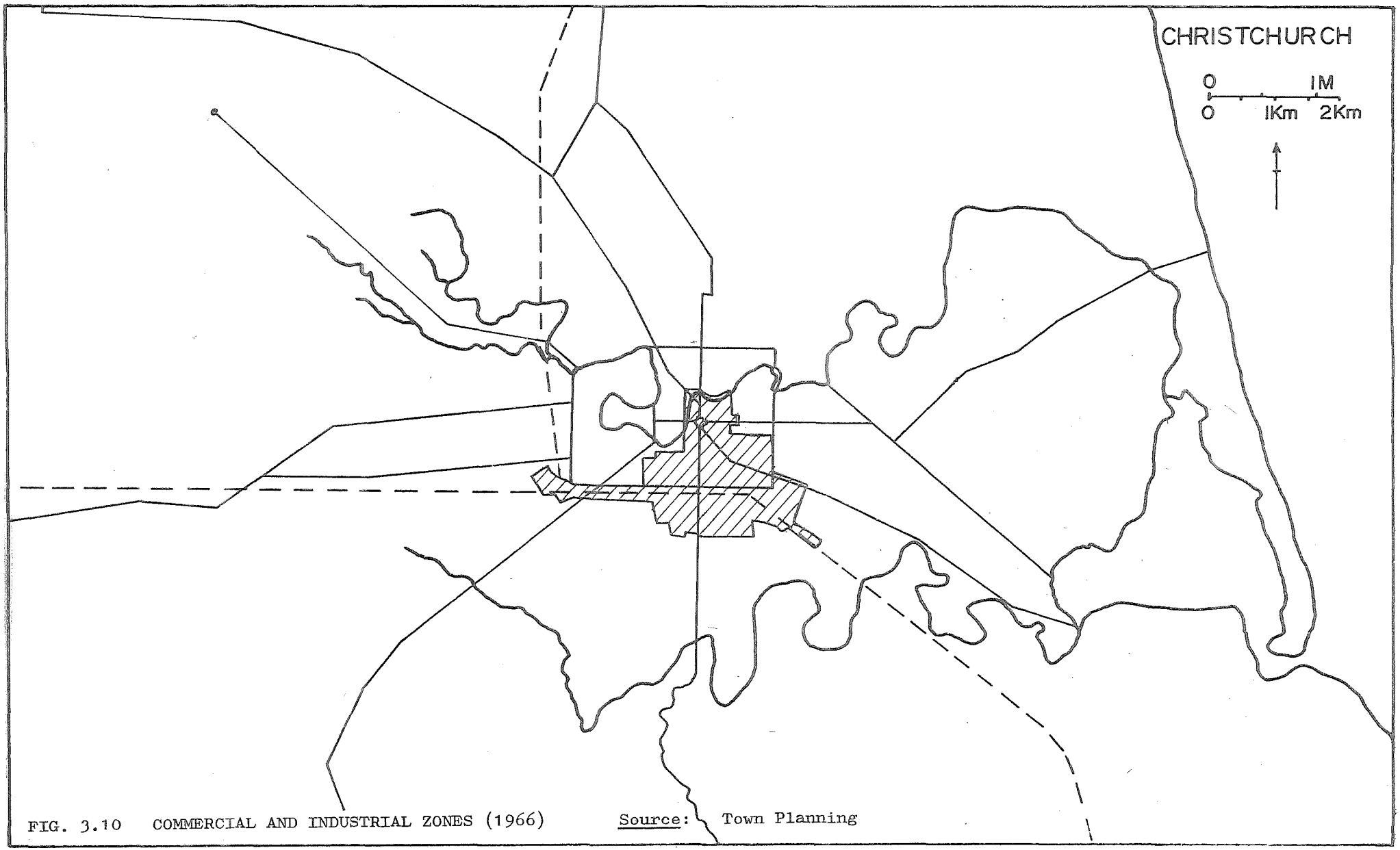

FIG. 3.10 COMMERCIAL AND INDUSTRIAL ZONES (1966) Source: Town Planning

preserved from general residential development, providing free and open country for the elite to occupy after the 1930's.

The assertion however, is not referring solely to land availability, as the role of the speculator is uncertain, due to the fact that information on the speculator was not readily available. The general impression, is that although speculation and property development companies existed, much of the residential growth was haphazard or on a small basis. A speculator - perhaps a farmer, may decide to subdivide and does so, but the individual effect on the final pattern is minimal.

(b) An Evaluation of the Theoretical Explanation

Hoyt (1939), draws out a number of physical, social, economic and technological factors to explain the observed patterns of high status area movement - many of these were found to be relevant, others required modification, and the remaining few were of doubtful importance. However, two areas with particular relevance to the Christchurch experience, were neglected. The first relates to the importance of the car, the other is the role of the public sector in the housing development.

In a later study by Hoyt (1964), the impact of the car was considered, showing that the introduction of the car, was to increase to a large degree the spatial option for residential location. In the early stages, car ownership was restricted

to the wealthy, thus allowing freer movement for this group only, from the main tramway routes. Gradually the relative price for a car dropped, with ownership becoming more widespread, so that by the 1970's every third person owed a car. During the 1950's - 60's, even the working class families were able to live on the urban periphery, especially with the development of such state housing areas as Aranui, Sockburn, Bishopdale and later Hoon Hay. Thus with this flexible means of transport, the middle and lower classes were able to outflank the slower growing elite areas. Likewise the car would allow some elite to live in scattered and isolated pockets miles from the centre.

The public sector has played an increasing role in the residential pattern, since the introduction of the Labour Government's policy of providing housing for the poor during the 1930's. Figure 3.11 shows the spatial spread of the state housing areas. It clearly becomes evident that the previously mentioned westward bending of higher status growth, is partly due to the development of the large state housing area centred on Aorangi Road. Scattered areas of state housing have taken place beyond the elite areas, on the urban fringe in parts of Yaldhurst, Avonhead and Bishopdale. High status growth has been discouraged by the presence of widespread state housing areas, a recent example is the southwest around Hoon Hay. Through the actions of the social welfare policies of the government in providing generous easy term loans for housing with repayment over 30-40 years and interest

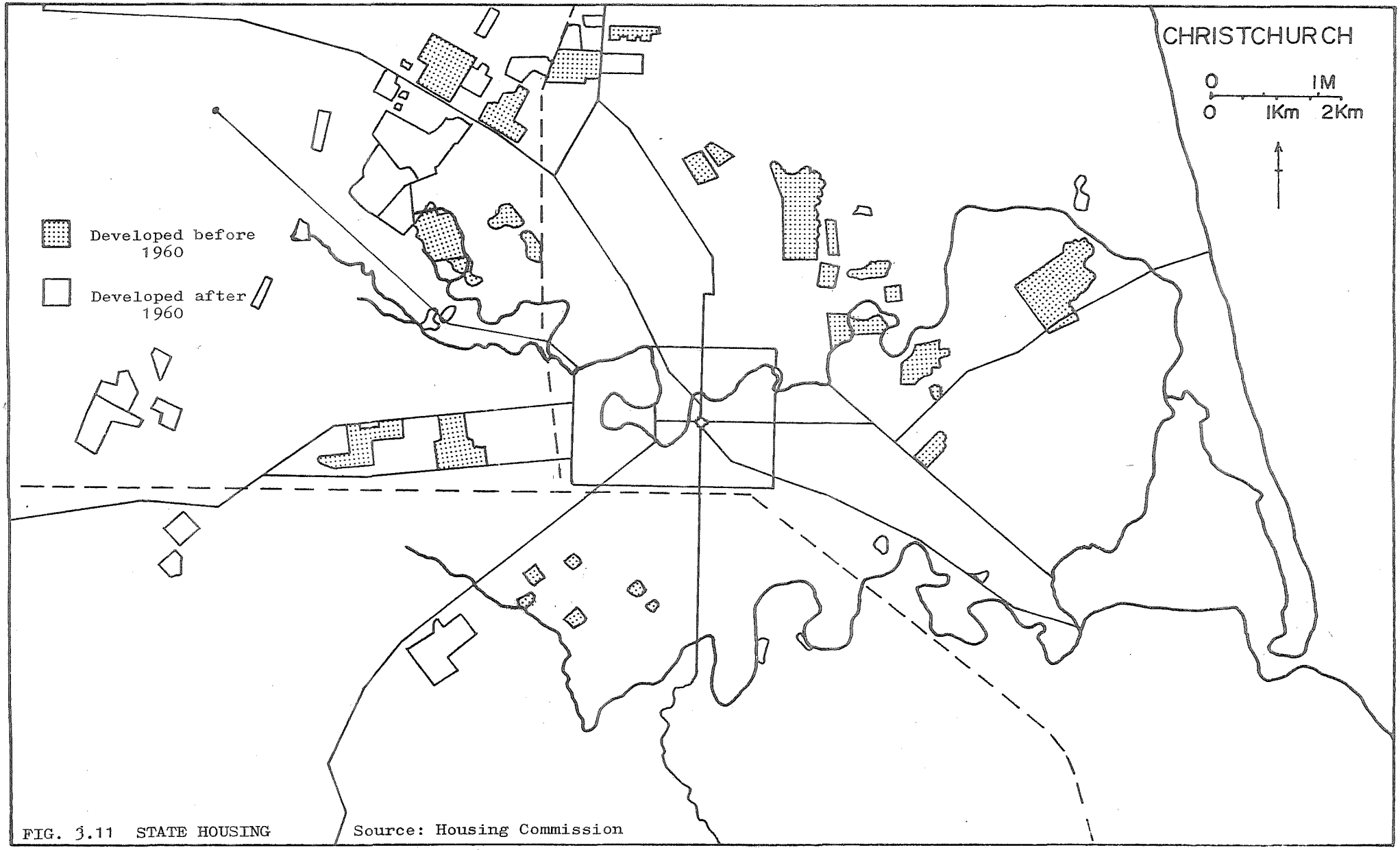

FIG. 3.11 STATE HOUSING Source: Housing Commission

rate as low as 3%, the middle class group have had greatly increased residential location options, resulting in competition with the elite for the desirable areas on the periphery. It may be concluded, that the presence of the public sector in certain cases reverses the Burgess - Hoyt formulation of low status control - high status periphery. Similar observation were noted by McGee (1969) in his Auckland/ Wellington study and discussed by Johnston (1973) in the formulation of his general residential model.

3.3 SOCIAL ATTITUDES AND LOCATION BEHAVIOUR

Existing urban theory offers some explanation of high status area change in Christchurch. Any theoretical explanation by necessity, deals with generalities. The level of application varies between different situations, with certain modifications appearing necessary, and it is doubtful whether any theoretical formulation can ever provide a complete explanation. In addition to the general trends and broad developments, there are many unique historical situations which are either ignored or inadequately treated in urban theory.

A comprehensive historical treatment of high status area change within the context of this thesis, is unrealistic. Attitudes and values relating to residential location behaviour however, are frequently reflected in newspaper property sale advertisement, therefore a study was made of the property

advertisements to investigate social attitudes and values to locational behaviour.

Property advertisements were analysed at decade intervals after 1878[1]. Generally the first Saturday of the month was selected, using the first four or five months of the year[2]. Advertisements can be broken down into a number of broad components which include:- house interior, exterior, additional housing facilities, grounds, physical location, social location, property size, price, and relationship to transport and communications.

Focus was mainly on the homes of the elite, although occasionally reference will be made to those of the lower socio-economic groups, for comparative purposes. The general format of the advertisements has remained fairly constant throughout the time period considered, but content has shown a marked change.

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(1) The Lyttelton Times was used till 1930, thereafter the Press was consulted.

(2) Flexibility was allowed because there was a considerable variation from month to month and year to year, in the number of advertisements offered, therefore months were added until it was felt that a representative picture had been obtained.

(a) Stylistic and Technological Obsolescence

Social attitudes to housing type and location were viewed by Lowry (1960) in terms of obsolescence(1). Stylistic and technological obsolescence are often quoted as a determining factor in the nature of high status area change, and may be reflected in property advertisements by inference; for example, in times of slow technological or stylistic change, there would be little emphasis placed on these features in the property advertisement. Likewise, these features would be included when society was undergoing rapid changes, thus trying to gain a competitive edge in the advertisements.

With these assumptions in mind, the property advertisements were analysed. In 1878, reference was generally made to the number of rooms - perhaps mentioning the type of panelling, room size, high ceiling, and the furniture and fittings, if these were sold with the property. Rarely, did these features dominate, or was attention given to the exterior design or materials, except perhaps to distinguish between single and double storied homes. In contrast, attention was focused on the nature of the outhouses and stables, the absence or presence of a well or artesian bore, and the absence or

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(1) In terms of the theory, some external forces are required to overcome the inertia of an established residency. Behaviour is viewed in terms of dissatisfaction; obsolescence is a relative concept which can be brought about by potential improvement elsewhere or a declining situation associated with the present location of property.

presence of a cowshed on the property. There was a distinct absence of mention of building material, or stylistic/ techonological type.

By the turn of the century, there was a distinct change in emphasis; in addition to the mention of the number of rooms, bathrooms and washhouses were now highlighted, with other new innovations including venetian blinds, interior plastering, electric bells, gas, and hot and cold water. Greater attention was also given to the exterior features - concrete foundations and iron roofs, emphasising the rapid stylistic and technological changes associate with the industrial revolution and implying a more rapid stylistic obsolescence. Outhouses, stables, cowsheds - important features of a household were replaced a decade later in the 1900's by claims to sewer connections, asphalt paths, high pressure water connections, gas and electricity.

In 1910, the features emphasised were similar to those of the 1900's, except for the special mention of dolton baths and sinks. Concrete foundations and iron roofs were less emphasised, but brick as the building material was mentioned more frequently, as was gas and electricity connections. Obviously the novelty of the new technological innovations were becoming less noteworthy as they became more widely available, but there was evidence of stylistic appreciation as "modern style" and "architecturally designed" began to appear in

advertisements, with cowsheds and stables rarely being noted, reflecting increasing urbanisation. The tram was now the main means of transport, slowly replacing the horse.

Building material was becoming the main feature of the 1920's; as seventy years had passed since the founding of the city, the 30-40 year old wooden homes would be showing signs of deterioration and requiring maintenance, thus the emphasis of the "permanent building materils", "brick home" and "low maintenance" was frequently emphasised. In addition interior wall paper was the new innovation and an occasional mention of the telephone. Early household amenities were still being mentioned frequently. Many must have been prompted to shift during this period due to the opportunity to incorporate all the new technological innovations and amenities into a modern design in brick, and be freed from the increasing maintenance costs.

The trends evident in 1920, continued into 1930, with permanent materials etc. being of importance. Iron roofs were being replaced with tiles, the number of advertisements including garages was notable, due to the change of mode of transport - horse to motor car, and the usual household amenities.

This trend continued into the 1940's, with very few differences, suggesting that the rate of stylistic obsolescence had again slowed after the revolutionary changes associated with housing in the previous three decades of this century.

During the 1950's, 60's and 70's, the presence of modern amenities was so common place that the expression "mod-cons" was frequently the only reference made. The external design, and building material, has still continued in importance, with the concrete block being introduced as an alternative building material. The slow rate of stylistic obsolescence evident since 1930 has continued.

In summarising, there appears to have been a distinct transition from the little stylistic obsolescence of the 1870's, to the rapid change as from the turn of the century, until 1930 when this rate slowed. The implications for high status area change according to urban theory, is that little pressure for residential moves from the style-technological change in the early period, contrasting with the high rate of movement expected in the first two to three decades following the turn of the century, and the now expected slower pace following the 1930's.

(b) Social Location

There are many forces influencing locational behaviour; the deteriorating circumstances in the social location or the locational obsolescence, seem to be the most important causal

forces according to Hoyt (1939) and Burgess (1924). Locational obsolescence[1] here include deterioration in the relationship to modes of transport as well as the social character of the neighbourhood.

During 1878 there appears to exist some social area consciousness, although this was limited in spatial dimensions, for example, prestige was often linked to a prominent personality[2], or a fairly specific area[3]. Often the air of respectability was presumed with the words - 'a gentlemen's residence'. There is little suggestion of locational obsolescence, as even the recognised elite housing placed great stress on a central location, usually as close as possible to the Post Office[4].

By the turn of the century, advertisements made little reference to social status in terms of personalities. Indeed few references were made concerning the social standing of a

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(1) Advertisements rarely contain the negative aspects of the social neighbourhood, so that a direct statement on locational obsolescence is impossible, but as with the investigation of stylistic obsolescence, the nature of locational obsolescence may be inferred.

(2) For example "immediately opposite the residence of Cowlishlaw" (near the corner of Barbadoes Street and the river).

(3) For example - the Corner of Chester Street West and Park Terrace - stated to be - "the choicest part in Christchurch".

(4) In 1878, the Post Office was located in Market Square, now known as Victoria Square; and was generally recognised as the centre of activity. A frequently used expression was - "a 5 minute walk to the Post Office".

neighbourhood, perhaps suggesting that Christchurch was passing through a transition period between being large enough so that individual personalities are not important, yet not of sufficient size for distinct high status neighbourhoods to be identified. As with the earlier periods, reference to 'a gentlemen's residence' was still used, hoping to give greater appeal. There was a growing tendency towards decentralisation and central location obsolescence due to easy access to tram routes, coach routes, and even cycling when living within a reasonable distance of the work place. Therefore location obsolescence occurred in respect to transport.

Social identity of suburban neighbourhoods was more clearly defined in 1910, yet only 5 of the 95 advertisements considered, make reference to the social status of the area(1) (Table 3.1). Importance of both central location and proximity to a tramway also continued to feature(2).

With the passing of time, there is evidence of increasing social awareness. In 1920, 12 out of 90 advertisements extolled the neighbourhood in some way (Table 3.1). Public transport continues to dominate locational considerations - 28 make reference to distance from a tramway route.

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(1) The areas included are:- Merivale, Cashmere, St Albans, Papanui and Beckenham.

(2) Frequent reference is made to - 'within the penny section' while 14 out of 95 made reference to a tram route.

TABLE 3.1 SELECTED FEATURES FREQUENTLY MENTIONED IN PROPERTY ADVERTISEMENTS

Mention of:	1878	1900	1910	1920	1930	1940	1950	1960	1970
No.(1)	30	50	95	90	66	50	90	46	62
Social Location	8	3	5	12	18	11	17	14	18
Physical Location	6	2	5	2	3	4	3	3	6
Central Location	6	3	3	2	3	1	1	-	2
Tram Routes	-	3	14	28	13	8	5	-	-
Bus Routes	-	-	-	-	1	2	3	2	6
Garage					4	3	6	7	9

(1) No. of these advertisements considered in depth.

By 1930, 18 out of 66 advertisements appealed to the social attributes of the location (Table 3.1), but the importance of a central location continued to decline. Only a few advertisements told prospective buyers of the quick 'walk home to lunch'; and only 13 out of 66 made reference to the tramways (Table 3.1). The number of references to garages increased, indicating the growing importance of private transport.

The appeal to social area consciousness appears to have stabilised by the 1940's, with only 15 of 100 advertisements referring to the social benefits of their neighbourhood. As the trends observed indicated earlier, the importance of the tram route locations steadily declined(1). In 1950, 20 out of 90 mentioned social attributes of the suburbs, 17 out of 120 in 1960, and 24 out of 100 in 1970. By 1950 only 5 references were made to tram routes, and the trams were withdrawn in 1955. In that same year, there was no reference to bus routes in the 46 advertisements noted, yet 7 references to garages on the property (Table 3.1).

In summarising, a definite transition was observed in location obsolescence. There was little in 1878, as social appeal was made in terms of personalities, or limited area, but a central location was highly desirable. In time however, social area consciousness developed, thus creating locational

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(1) Only 8 out of 50 advertisements mentioned trams.

obsolescence for those of the elite not living in the fashionable areas. The comprehensive tramway network reduced the importance of a central location and provided the opportunity of movement to a peripherial location. The private car, has accentuated the trends established by the introduction of public transport. Thus, locational obsolescence tended to occur in highly central areas and in the last two decades, immediately adjacent to the main transport routes.

(c) Physical Location

In contrast to social location, physical location is rarely involved in obsolescence; social attributes of an area are a product of society whereas physical attributes in general are not. The perception of physical attributes may change, also human activity may alter the physical environment, as in river or air pollution, but, by comparison with social attributes, the physical attributes are often more enduring. The newspaper property advertisements were considered to discover those features of the physical environment which are most valued, on the assumption that these will be emphasised in the advertisements.

A wide range of physical advantages were stressed in 1878. These included; 'high land', 'good drainage', 'river location' - being close to either the Avon or Heathcote, 'a healthy location' and 'good soils'. Thus the features of elevation and water frontage identified by Hoyt (1939) have featured prominently.

Interest in physical features showed a decline at the turn of the century, possibly because of the tremendous impact of new household amenities and technological innovations outlined earlier. High, dry land received a mention, but river frontages were almost totally ignored. The latter may partly be due to the transitional location of the high status area, extending from the central area north into St Albans, Papanui and Merivale, which were all isolated from the main river networks.

Hillside location was first mentioned in 1920 with emphasis being placed on the excellent view, and the quiet, sunny and sheltered location. However there was little mention of either river location or high dry land.

River locations, were once again of interest in 1930. Other attributes, such as high land, sunny aspect, sheltered position, and a good view also appeared, but an added incentive was offered - that of privacy. Most of these features were repeated during the following decades, with the hillside benefits dominating. However, reference to the physical location played a relatively minor role in the overall attributes stressed in advertisements (Table 3.1).

PLATE 2: Nineteenth century high status home in the central area of the northwest, illustrating continued status in the area - Park Tce.

PLATE 3: Nineteenth century high status home on the eastern side of Latimer Square.

3.4 SOCIAL AREA DECLINE

One of the spatial implications drawn from the classical hypothesis is that the initial, central fashionable area will in time drop further and further down the social scale, eventually to be occupied by those of the lowest status groups. In addition, in terms of the sector theory transects from the city centre to the periphery within the high status sector should reveal zones of increasing status.

Examination of the first implication, was made by comparing the present status level of an area with its former high status. Figure 3.12 presents a picture of contemporary status patterns based on the 1971 Census data(1). The earliest computed high status areas were for 1878(2), when the location of the elite formed a roughly concentric pattern close around Cathedral Square (Fig. 3.12). A closer examination of this central area (Fig. 3.13), reveals that this area currently reflects three different status ratings:- the northwest and east has a rating of two, the southwest three, with the southern area now almost totally commercial and industrial showing the lowest rating with five; indicating that a century later only one area has dropped to the lowest status(3), while the others have only dropped one or two rating points (see Plates 2, 3 and 4).

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(1) This map is based on the result of a study conducted by P. Newton in his doctorate studies.

(2) See earlier analysis of high status patterns in CH.2.

(3) This area is now predominantly commercial and industrial.

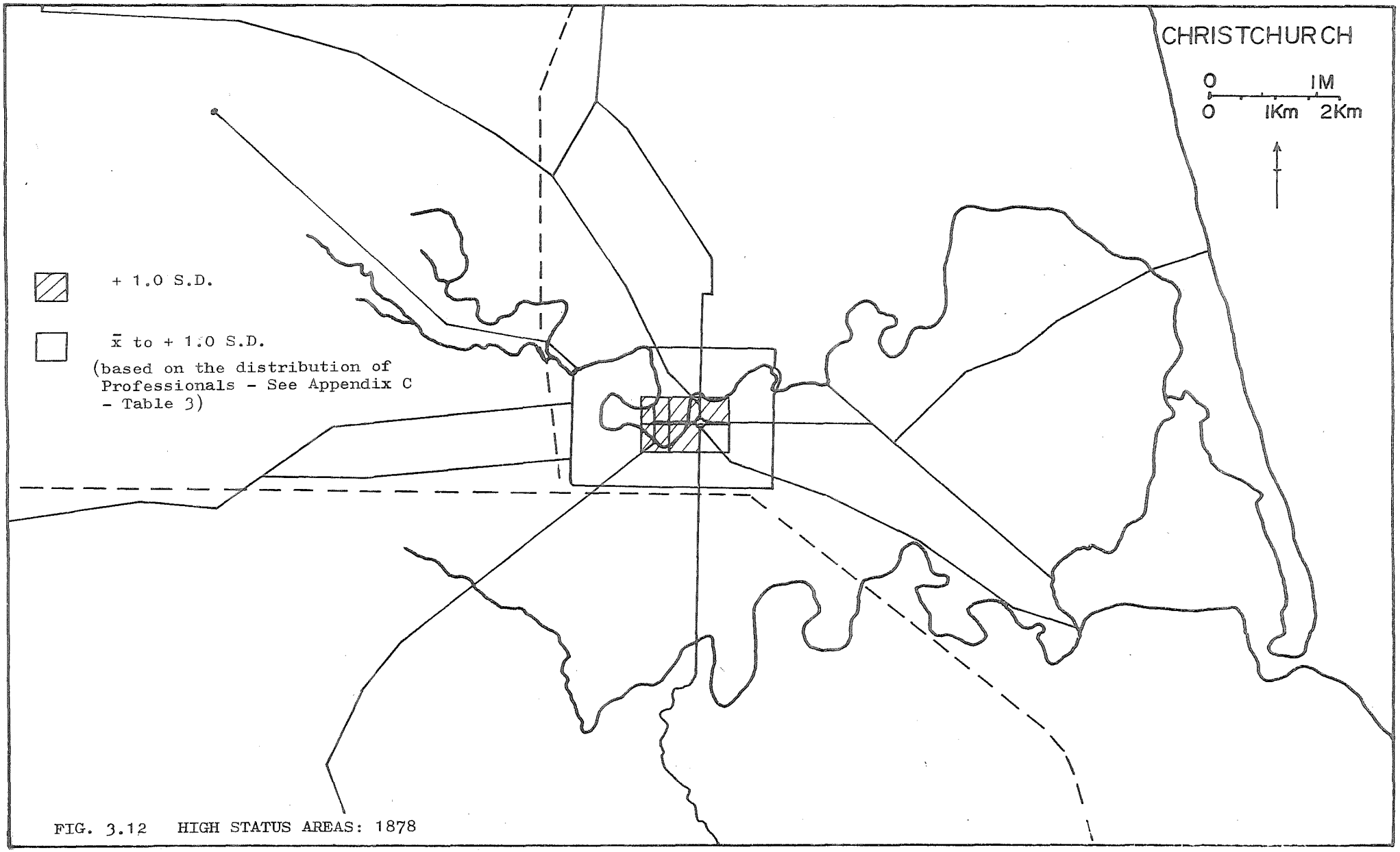

FIG. 3.12 HIGH STATUS AREAS: 1878

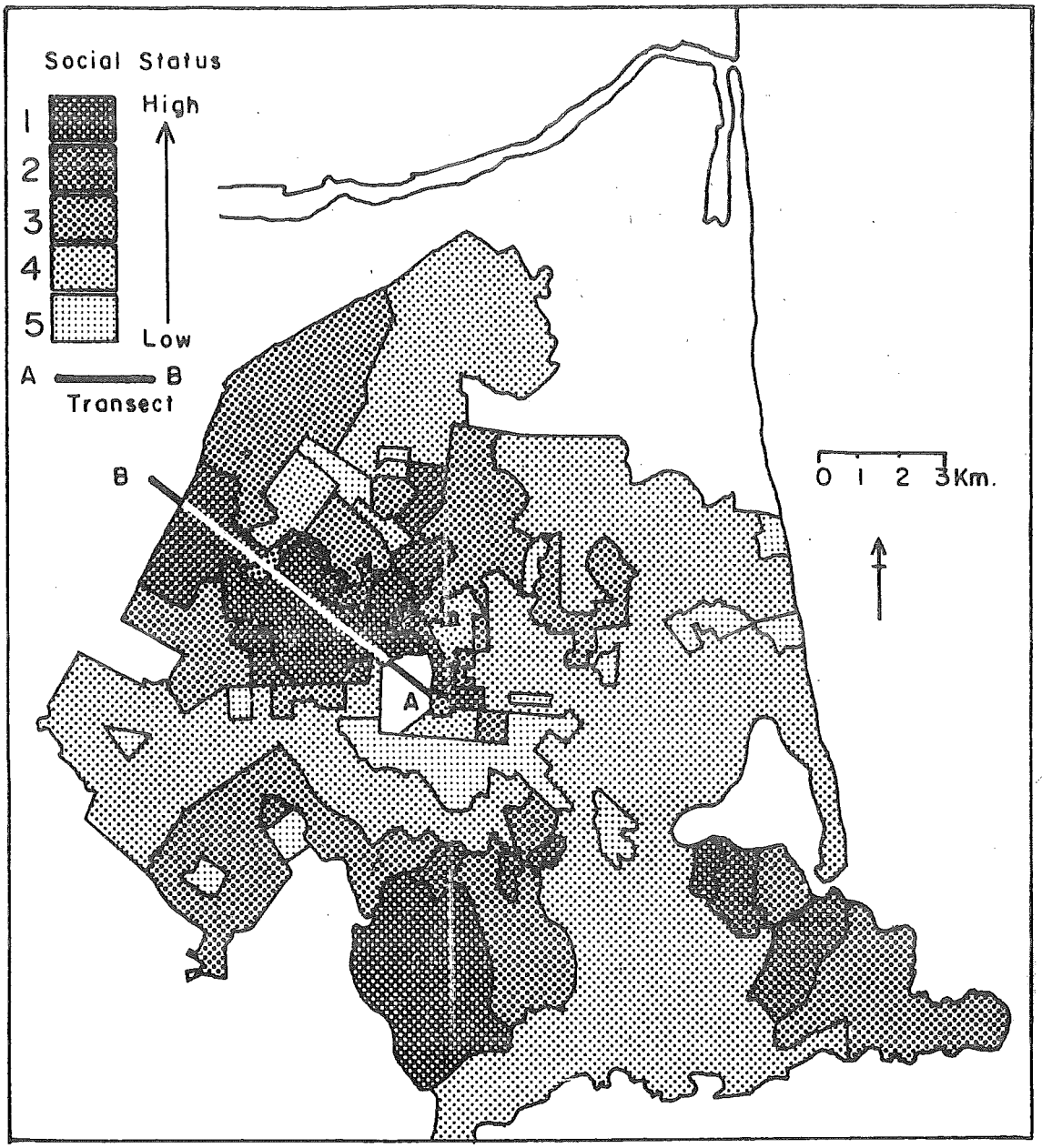

FIG. 3.13 SOCIAL STATUS : 1971

Source: Newton (pers. com.)

PLATE 4: Central area nineteenth century working class homes - Salisbury Street.

PLATE 5: Older high status homes in Merivale - Hewitts Street.

PLATE 6: Older high status home in Fendalton - Glandovey Rd.

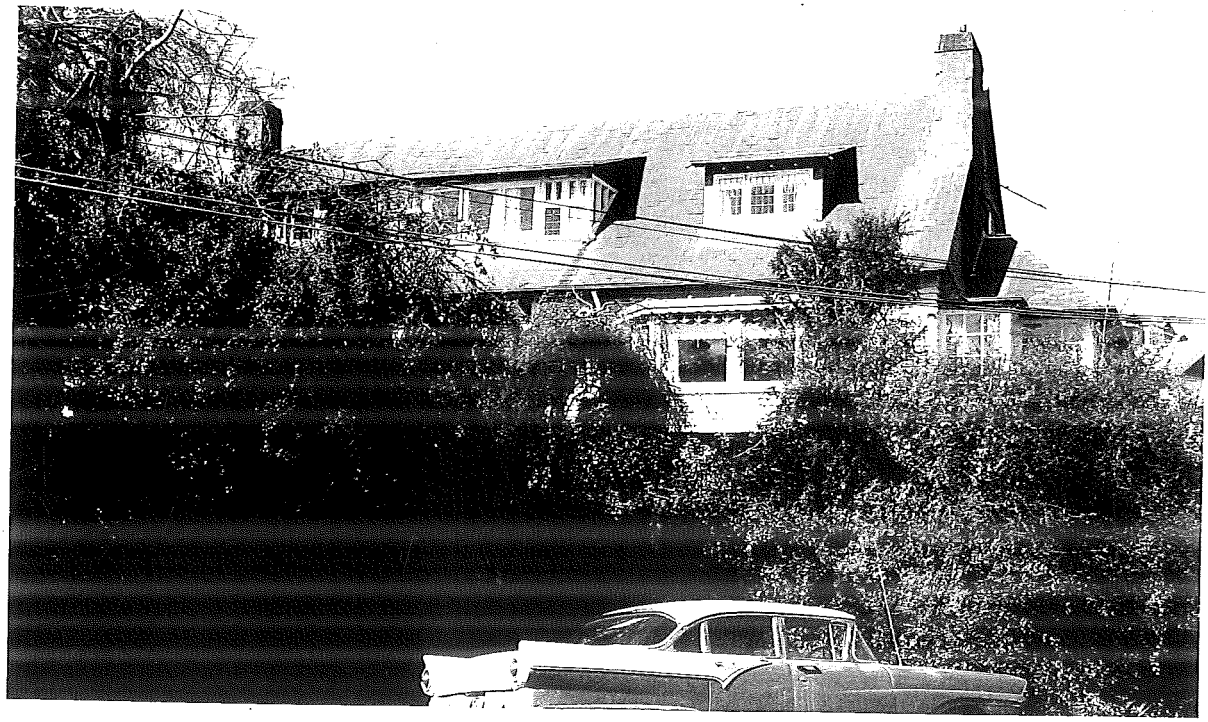

PLATE 7: Older high status home in Cashmere - McMillan Ave.

A comparison between 1930 (Fig. 3.14) and 1971 (Fig. 3.12), reveals even less of an overall change. The majority of the area in the northwest has retained the highest social rating, (Plates 5; 6) with the exceptions being an area off the north-western corner of Hagley Park (North Deans Avenue area) and an area centred on the junction of Bealey Avenue and Papanui Road, both decreasing by one status point. Cashmere retained its high status, (Plate 7) and the remaining formally high status area of the city, have only decreased one or two relative status ratings. For example, the 1930 high status areas centred on Latimer and Cranmer Squares have only dropped to the second rank, with the greatest decline being experienced by an isolated area in Richmond, which appears to have dropped to the second lowest rating.

These observed patterns of social area change appear to be at variance with those hypothesised by the classical models. With the exception of the former high status areas centrally located, which have been encroached upon by commercial and industrial expansion (Plate 8), most suburban areas have retained their general status ranking through time.

To test this suggestion, an estimate of social rank has been established at 10 year intervals from the turn of the century, based on advertised property values

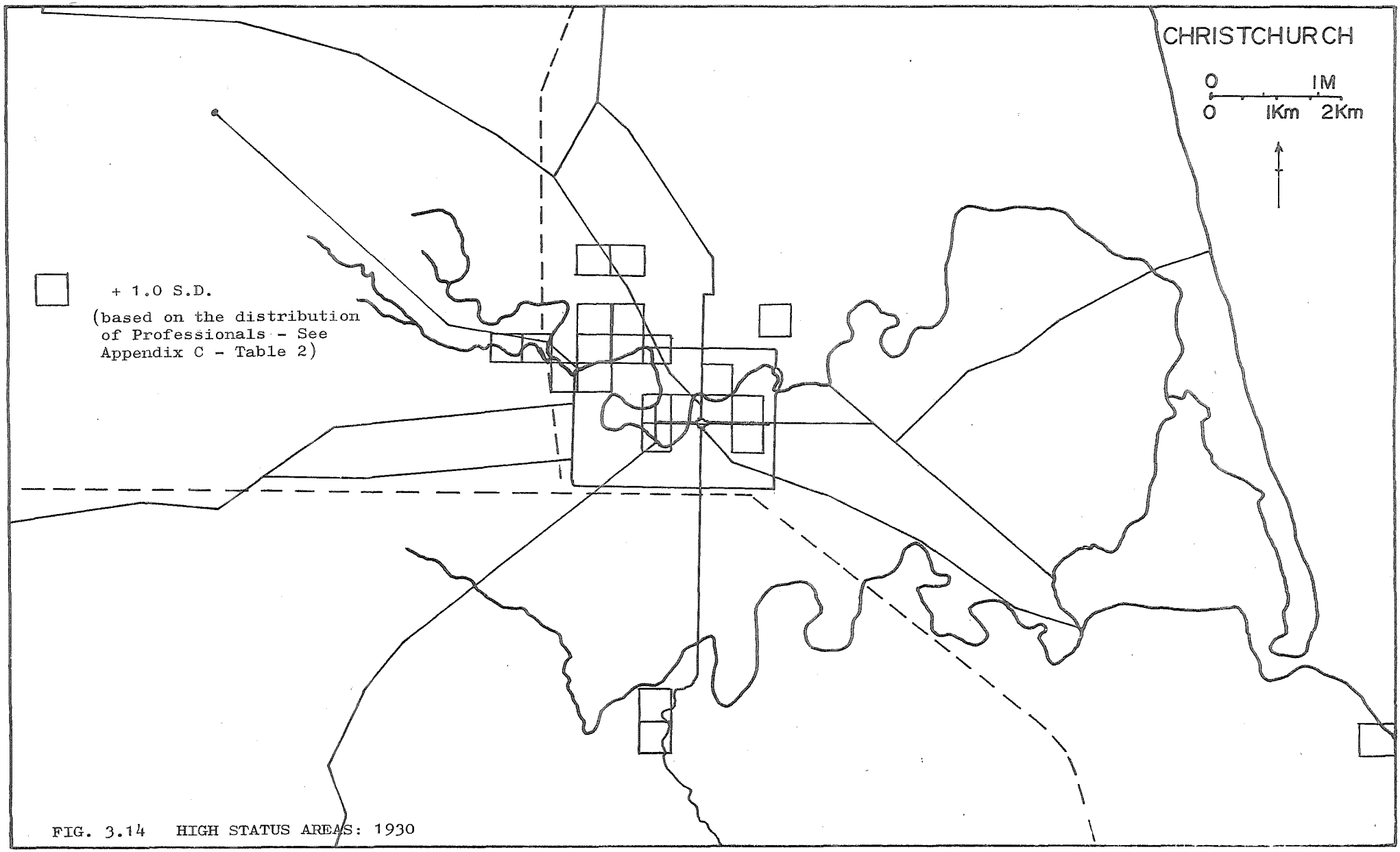

FIG. 3.14 HIGH STATUS AREAS: 1930

(Table 3.2)[1]. A contemporary comparison of the property based on data is provided by standard scores for socio-economic status, computed from the Newton[2] factorial ecology of Christchurch for 1971 (Table 3.3) and the area delineation for the property based social areas appears in Figure 3.15. In addition to the general problems associated with interpreting social status from property values, one of the factors which affects the relative social rating, is the temporary absence of important suburbs due to an insufficient number of property advertisements.

It is difficult to readily identify the basic trends from the complexity of data provided in Tables 3.2 and 3.3. A number of important suburbs will be traced through time. At the turn of the century, Merivale, Papanui and Cashmere appeared to form the basis of the fashionable suburbs, and for the next three decades they fluctuated, but generally retained their status rating; Cashmere rose to a Z- score of 2.5 (1910), but all records dropped, with Cashmere to +0.4, Papanui and Merivale to +0.5. By 1930, these three suburbs had to

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(1) There are recognised difficulties in using property values to reflect status. For example, new homes in a given area tend to inflate the average value. In other cases the price may reflect the quality of the house, but not necessarily the area, this can work both ways; an expensive house may sometimes be found in an average suburb, alternatively, a delapidated cottage may exist in a fashionable area. These chance variations are nullified by sufficient numbers, but in a city wide survey with up to 32 suburbs, this may prove difficult.

(2) Incomplete doctoral thesis by P. Newton.

TABLE 3.2 SOCIAL AREA[1] RANKING

Rank	1900 Area	1900 Z Score[2]	1910 Area	1910 Z Score	1920 Area	1920 Z Score	1930 Area	1930 Z Score
1	Papanui	+1.8	Cashmere	+2.5	Fendalton	+1.8	Fendalton	+1.3
2	Merivale	+1.1	Papanui	+1.3	Papanui	+1.5	Cashmere The Hills	+1.0
3	St Albans	+ .7	City	+0.8	Riccarton	+0.8	Merivale	+0.8
4	City	+0.1	Merivale	+0.5	Merivale Avonside	+0.6	Papanui	+0.5
5	Addington	-0.2	St Albans	+0.4	Cashmere	+0.4	City Riccarton	+0.3
6	Linwood Spreydon	-0.6	Opawa	+0.2	St Albans City	0.0	St Albans	-0.2
7	Avonside Richmond	-0.7	Spreydon	+0.1	Opawa	-0.5	St Martins	-0.8
8	Riccarton	-1.2	Linwood	-0.1	Linwood	-0.8	Spreydon Shirley	-0.9
9			Beckenham Avonside Richmond	-0.6	Spreydon	-1.1	Linwood	-1.7
10			Addington	-0.7	Addington	-1.2	Sydenham	-2.2
11			Sumner	-0.75	Waltham	-1.3		
12			St Martins	-1.1				
13			Sydenham	-1.5				

Those with only 1 observation

Fendalton

$\bar{x}$ = 416.33

S.D. = 88.85

Those with 1 observation

Waltham
Fendalton
Riccarton

$\bar{x}$ = 602.7

S.D. = 142.7

Those with 1 observation

Sumner
Woolston
New Brighton
Richmond

$\bar{x}$ = 1009.6

S.D. = 229.1

Areas with only 1 observation

Addington
Beckenham
Waltham

$\bar{x}$ = 1339.1

S.D. = 397.7

(1) Suburban areas based on that given in property advertisements.

(2) Scores computed from average value of property advertisements.

TABLE 3.2 continued

Rank	1940 Area	Z Score	1950		1960		1970	
1	Hills	+1.7	Hills	+1.7	Cashmere	+1.6	Fendalton	+2.5
2	Fendalton	+1.4	Cashmere	+1.1	Hills	+1.4	Bryndwr Strowan	+1.3
3	Cashmere	+1.2	Merivale Fendalton	+1.0	Fendalton Merivale	+1.3	Avonhead	+1.0
4	Papanui	+0.7	Papanui	+0.7	Bryndwr Strowan	+0.4	Burnside	+0.9
5	Riccarton	+0.4	Bryndwr Strowan	+0.3	St Albans	+0.3	Merivale Papanui	+0.4
6	Merivale	+0.3	Northwest	+0.2	Ilam Papanui	+0.2	Northwest Riccarton	+0.2
7	St Albans	+0.2	Shirley	0.0	Shirley	0.0	Ilam Lower Cashmere St Martins	+0.1
8	Spreydon	0.0	Sumner Opawa	-0.1	Riccarton	-0.1	City	0.0
9	Beckenham	-0.3	St Albans Riccarton Avonside	-0.3	Wainoni Aranui	-0.2	Hillmorton	-0.2
10	Richmond	-0.5	City Linwood	-0.8	Opawa	-0.6	Sumner	-0.4
11	City	-0.6	New Brighton	-1.2	City Spreydon	-0.8	Wainoni Aranui	-0.7
12	Opawa	-0.7	Woolston Waltham	-1.6	Linwood Hornby Woolston Waltham	-1.1	St Albans Spreydon	-0.8
13	Linwood	-0.8	Sydenham	-1.7	New Brighton	-1.2	Hoon Hay	-1.0
14	Sumner	-1.3			Sydenham	-1.5	Shirley	-1.7
15	New Brighton	-1.7					Woolston Waltham	-1.9

Areas with only 1 observation

Addington
St Martins
Avonside

$\bar{x}$ = 999.8

S.D. = 247.63

Areas with only 1 observation

Hornby
Richmond

$\bar{x}$ = 2763.33

S.D. = 914.21

Areas with only 1 observation

Northwest
Avonhead
Hoon Hay
Hillmorton
Lower Cashmere
St Martins

$\bar{x}$ = 3827.65

S.D. = 1590.55

Areas with only 1 observation

Bishopdale
Hornby
Hills
Opawa

$\bar{x}$ = 11951.34

S.D. = 4450.42

TABLE 3.3 SOCIAL AREA RANKING: 1971

Rank	Area[1]	Z Score[2]	Rank	Area	Z Score
1	Fendalton	+ 3.1	12	Beckenham	- 0.1
2	Cashmere	+ 2.8	13	Shirley	- 0.2
3	Merivale	+ 2.6	14	Bryndwr	- 0.3
4	Ilam Papanui Inner	+ 2.2		City	
			15	Richmond	- 0.4
5	Mt Pleasant	+ 2.0	16	Avonside	- 0.7
6	Avonhead	+ 1.5	17	Linwood New Brighton	- 0.8
7	Burnside	+ 0.9	18	Hornby Woolston	- 0.9
8	Ricc. Upper Ricc. Lower St Martins	+ 0.6	19	Wainoni Aranui Waltham	- 1.0
9	Opawa	+ 0.4		Spreydon	- 1.1
10	Hoon Hay	+ 0.2		Sydenham	- 1.2
11	Sumner Papanui Upper Bishopdale	+ 0.1			

(1) For a delineation of areas see Figure 3.15

(2) The Z-scores have been taken from a factorial ecology of Christchurch based on the 1971 Cebsus data, undertaken by Newton. The scores refer to the Socio-Economic Component.

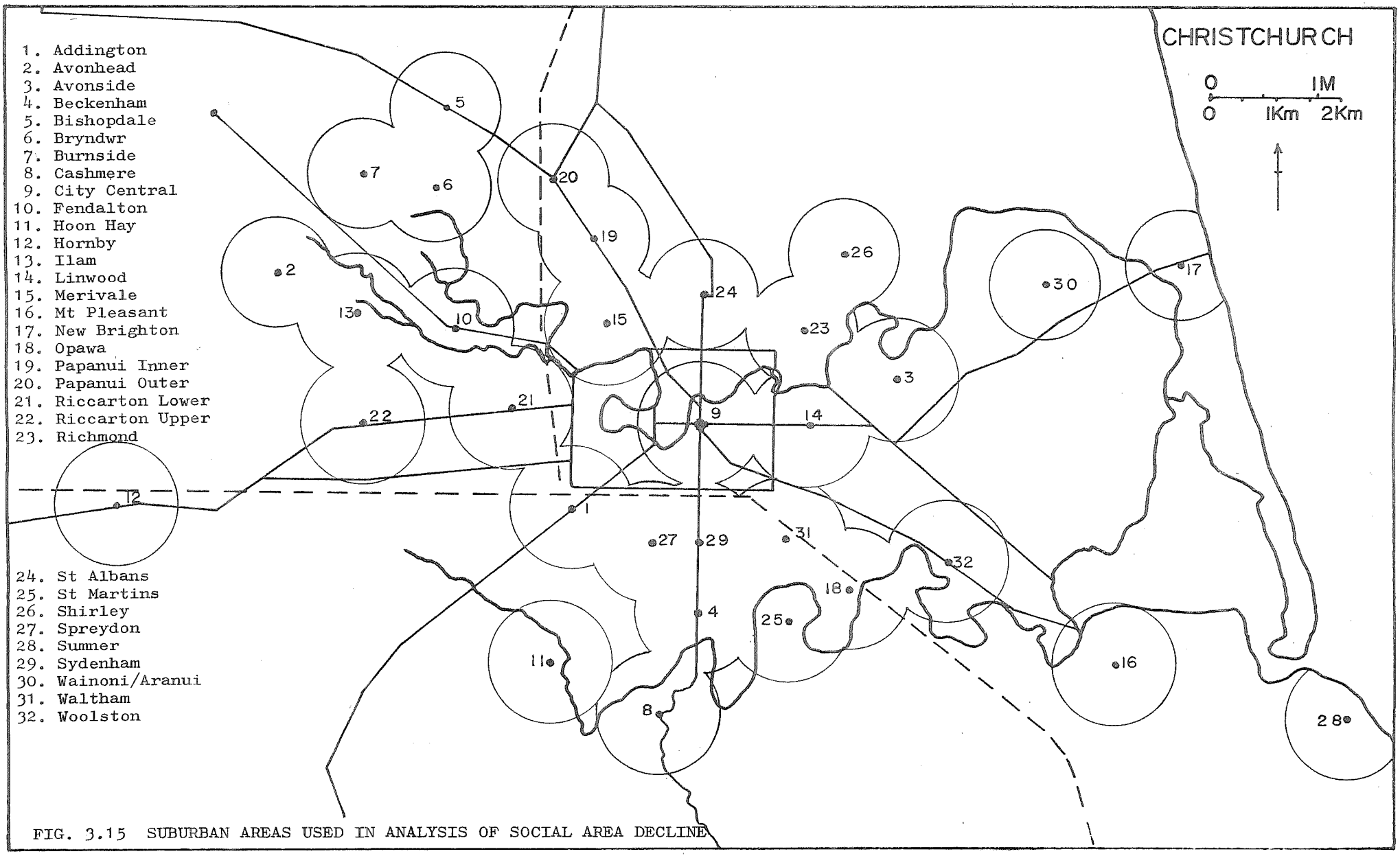

FIG. 3.15 SUBURBAN AREAS USED IN ANALYSIS OF SOCIAL AREA DECLINE

compete with two new emerging fashionable areas; Fendalton and the hillside suburbs of St Andrews, Murray Aynsley, and Hillsborough broadly referred to as the "Hills". In the subsequent decades these new elitist areas with Cashmere competed for top status positions; the Hills in 1940 and 1950 Cashmere in 1960 and Fendalton in 1970. Overall, Fendalton held top position most frequently - three times out of eight, firstly attaining this position in 1920. Cashmere and the Hills both held the highest position twice, and Papanui once. Papanui and Merivale hover in and out of the elite group(1), with an average overall for Papanui of +0.9 and Merivale of +0.8. In the 1950's, 60's and 70's, there have been a number of new suburbs competing for the elite groups, these include Bryndwr/Strowan, Avonhead, Burnside and Ilam.

Two significant features of these high status area trends emerge, suburbs which represented the elite area in 1900, still retained their high status 70 years later, and the new high status areas do not reach that position by rising through the social ranking, but by immediately assuming a reasonably high status position. The first appearance of Fendalton in 1920 saw the suburb with a standard score of +1.8; likewise Cashmere in 1910 was 2.5, the Hills in 1930 at 1.0, and Avonhead and Burnside in 1970 at +1.0 and +0.9

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(1) Defined as those areas with a Z-score in excess of +1.0, or greater than +1.0 standard deviation.

PLATE 8: Nineteenth century working class homes in Sydenham being absorbed by industrial development - Coleridge St.

PLATE 9: New high status homes in the northwest - Gothic Place

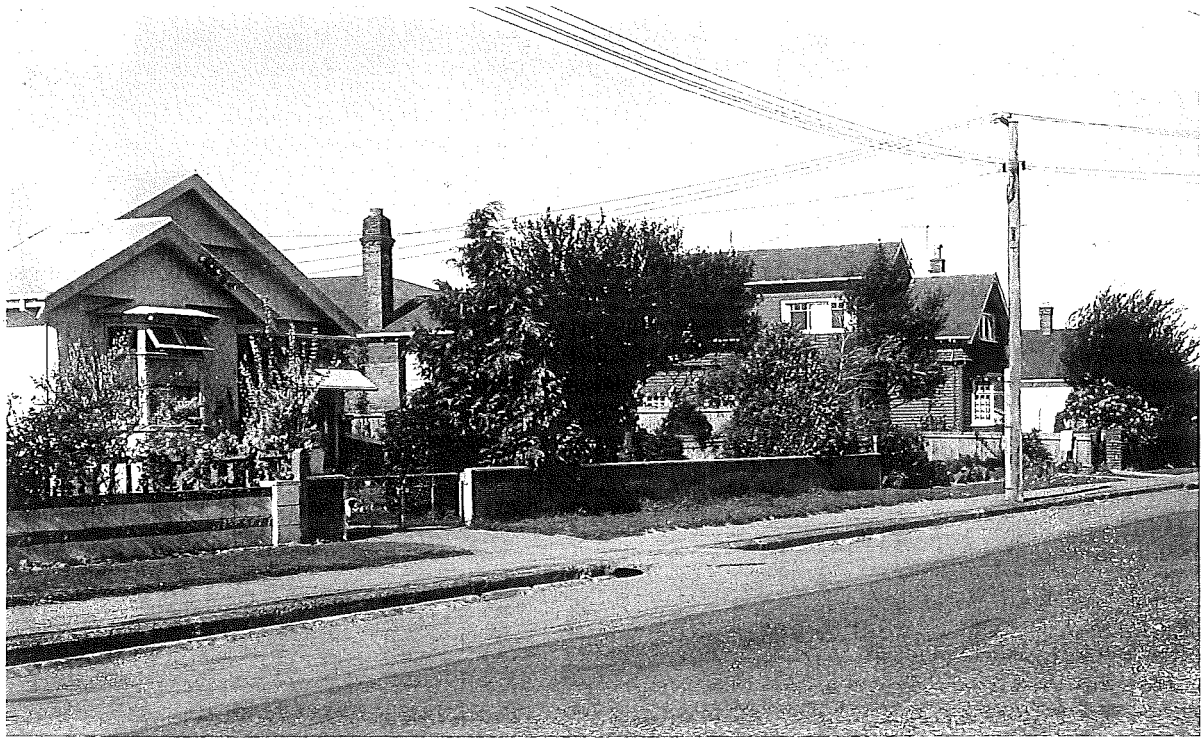

PLATE 10: An example of continuing middle class status of nineteenth century homes in Spreydon - Bolton Street.

PLATE 11: Deteriorating nineteenth century working class homes in Sydenham - Kingsley Street.

respectively (Plate 9). There are a few minor exceptions, for example, Bryndwr/Strowan +1.3 in 1970, but +0.4 in 1960. Another amonoly is Ilam, as the socio-economic ranking of 1971 (Table 3.3) show it highly placed, ahead of Avonhead and Mr Pleasant, but the property data of 1950 firstly placing Ilam at only +0.2 and +0.1 in 1970. This may possibly be due to chance low values, or the fact that there was a state housing area centring on Aorangi Road, which would lower the average property values if houses from this area were advertised.

The suburbs in the middle status groups, between +1.0 and -1.0, appeared to exhibit more social mobility; both up and down. For example, St albans in 1900 had a reasonably high social rating, that of +0.7; by 1920 it had dropped to unity - this general social status decline continued with some fluctuation to reach a low of -0.8 by 1970. Spreydon, on the other hand, remained fairly consistent. The suburbs in 1900, had a lower middle class rating of -0.6; this varied to reach unity in 1940 and finally ended with a rating of -0.8 in 1970 (Plate 10). A further example is provided by the city central area - within the four belts. In 1900, the area was socially close to the average at +0.1, and rose to +0.8 in 1910. This fluctuated until 1930, when the central area experienced a general decline to reach a low of -0.8 in both 1950 and 1960, and ending at unity in 1970.

The significant feature of these middle class area trends, is the fluctuation within the general middle class

boundaries, within ±1S.D. Within this variation there appears to be a general tendency of declining status, with the older middle class areas slipping down the social scale as new middle class suburbs emerge.

Likewise, the lowest status areas exhibit fluctuations within limits, but generally remain fairly close to the social scale base. Riccarton; which rose from -1.2 in the 1900's to +0.8 in 1920 and hereafter generally fluctuating close and slightly above the average and ending at +0.2 in 1970, is not a contradiction to the mentioned observation, as independent evidence suggests that 1900 was a chance low rating. Sydenham, Woolston and Waltham, considered separately or in combination, however all failed to rise above the lowest social level

These observations do not support the pattern of social area change hypothesised by the classical models; as instead of the initial high status areas steadily slipping down the social scale, they have generally retained their standing over the 70 years considered. Within the middle class groups, there does appear to be some downward filtering, but even this does not fulfil the predictions of the models, as the middle class areas in general do not sink to the lowest levels. The lowest levels are occupied by the suburbs which initially grew as working class suburbs, and established within the earliest period of Christchurch's development. Similar patterns of social area permanence were observed by Guest (1974) in a recent study of 'suburban life cycles' in American

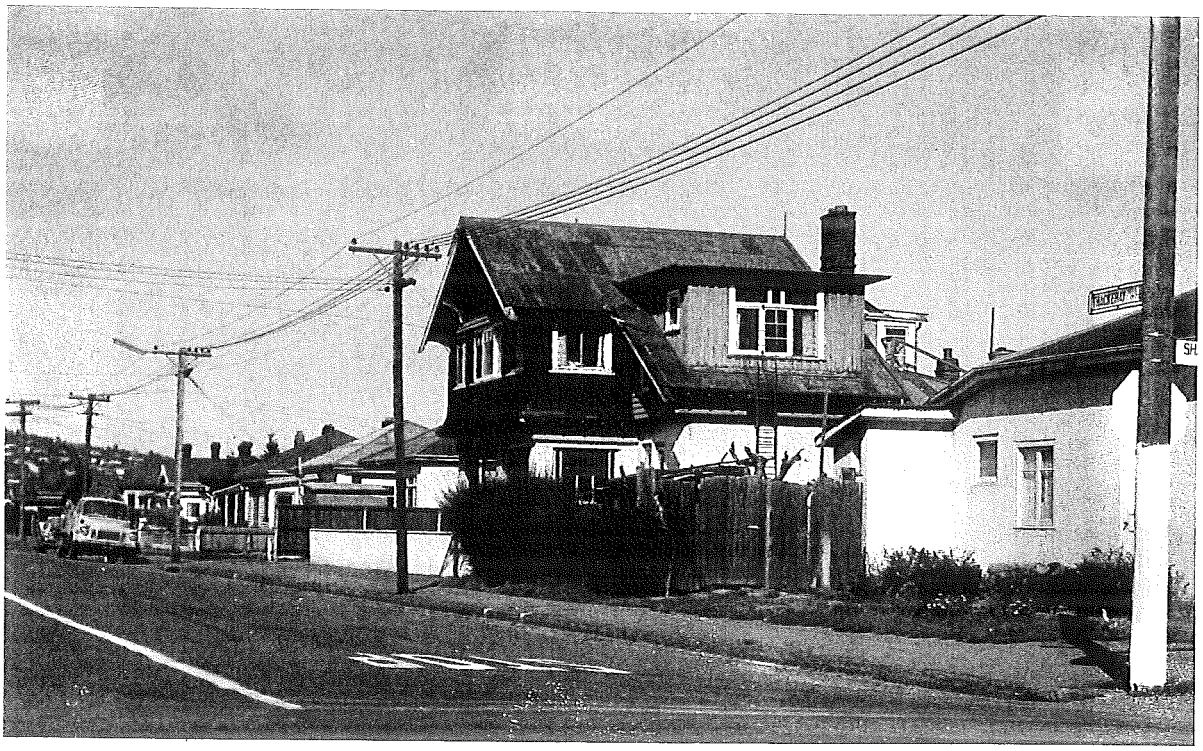

PLATE 12: Deteriorating nineteenth century working class homes in Waltham - Thackeray Street.

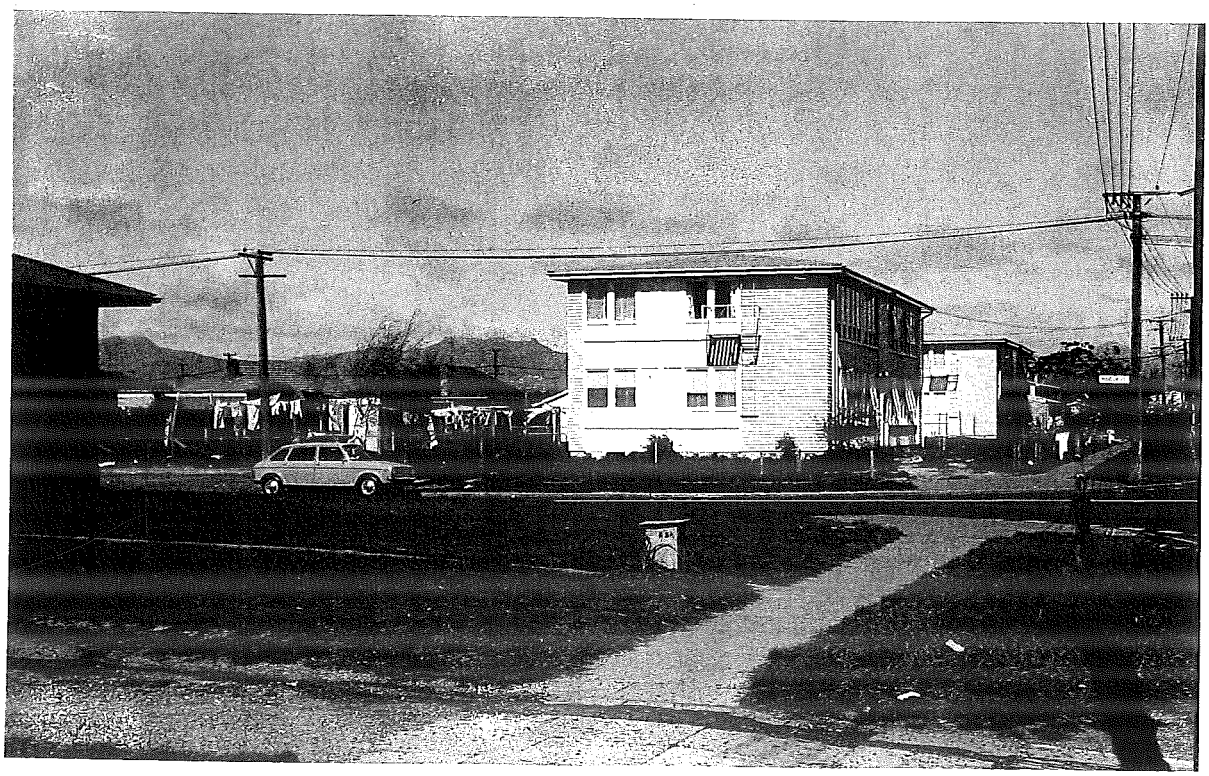

PLATE 13: Post-war working class homes in Wainoni - Hampshire Street.

PLATE 14: Recent middle class housing in the northwest - Farrington Ave.

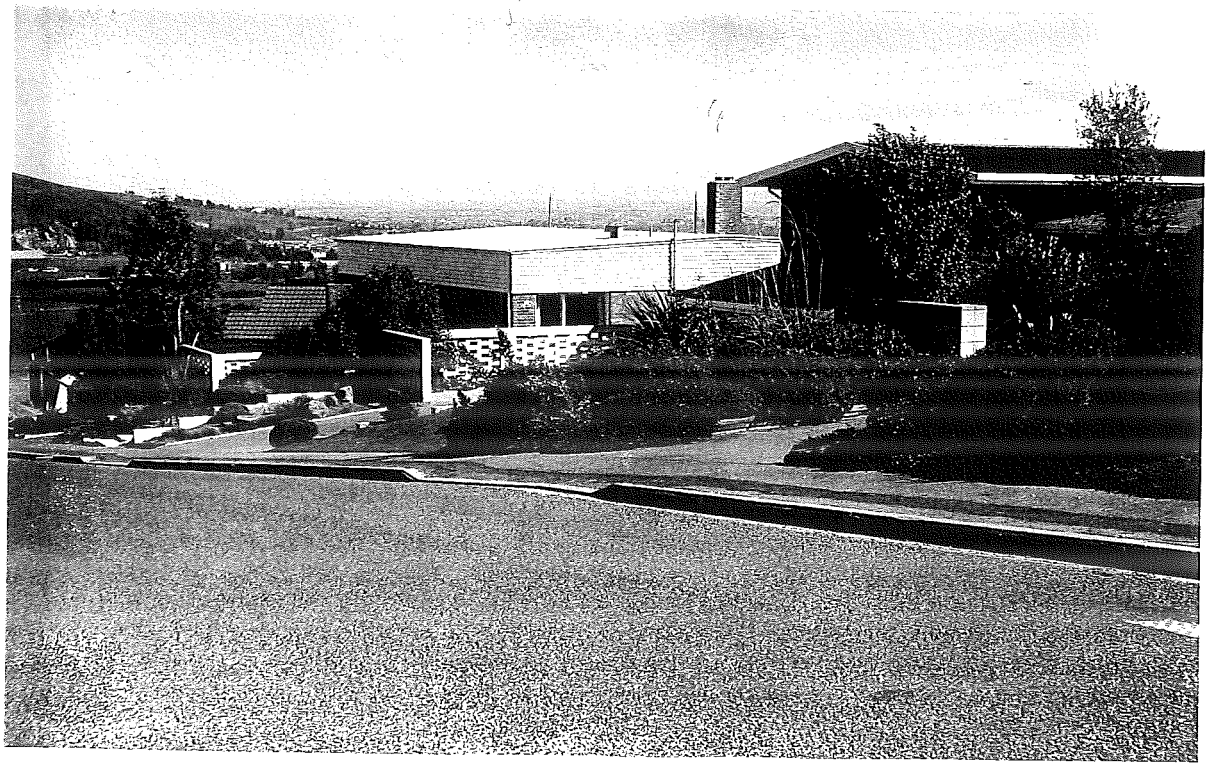

PLATE 15: Recent high status housing on the hills - Michael Avenue.

cities. Perhaps this general social area stability partly may be due to the absence of the filtering process[1] as conceived in the classical models. The steady outward movement of high status areas keeping pace with general population expansion, did not take place in Christchurch. Therefore there was no large number of originally high status properties available to be filled by lesser social groups. Instead the different social groups established separate suburbs in various parts of the city, as the city grew, with migration appearing to have played only a minor part in this neighbourhood forming process (Plates 13, 14 and 15).

The sector theory predicted a similar pattern of social area decline as those already investigated with the exception that the complete range of social neighbourhoods will only be found in the high status sector. Burgess (1924), conceived social area decline moving out from the city centre, Hoyt (1939) however, limited this complete social area decline to the high status sector.

To investigate this hypothesis, the northwest quadrant has been divided into seven transects, spaced at 15 degrees, with a further division into five concentric zones. This framework was superimposed over the grid squares of professional

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(1) McGee (1969) suggested that New Zealand society is characterised by the lack of motive to shift, though increased wealth may allow such movement.

distributions used in the analysis of high status patterns in Chapter 2[1]. For each sample point, the number of professionals were noted and the raw scores converted to standard scores - Z scores (Table 3.4).

Little was revealed in the 1878 pattern, since the distribution only extended to the second zone. The 1930 distribution was more complete, but revealing little outward progression of the social rating. For example, in transect B the highest rating was recorded in the first zone, that of +2.8, with negative values for the next two zones. In transect C, the highest status area extended further to the urban periphery, with the highest in zone three - that of +2.3. The distribution for transect F was similar to that of B. The distribution of the northwest sector in 1930 shows little conformity to the hypothesis. The high status extends outward from the central areas, generally with as much lower status areas beyond, as within.

In the distribution of 1973, the centre of high status has shifted slightly outwards. The highest status ratings are found in zones two and three, with lower status recordings within and beyond. For example the Z scores along transect B are:- -0.5, -0.1, +0.3, -0.3, and -0.3. Similarly for transect D the ratings are as follows, -0.5, +0.5, +0.7, +0.5, and -0.5.

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(1) The framework and sample locations are presented in Figure 3.16.

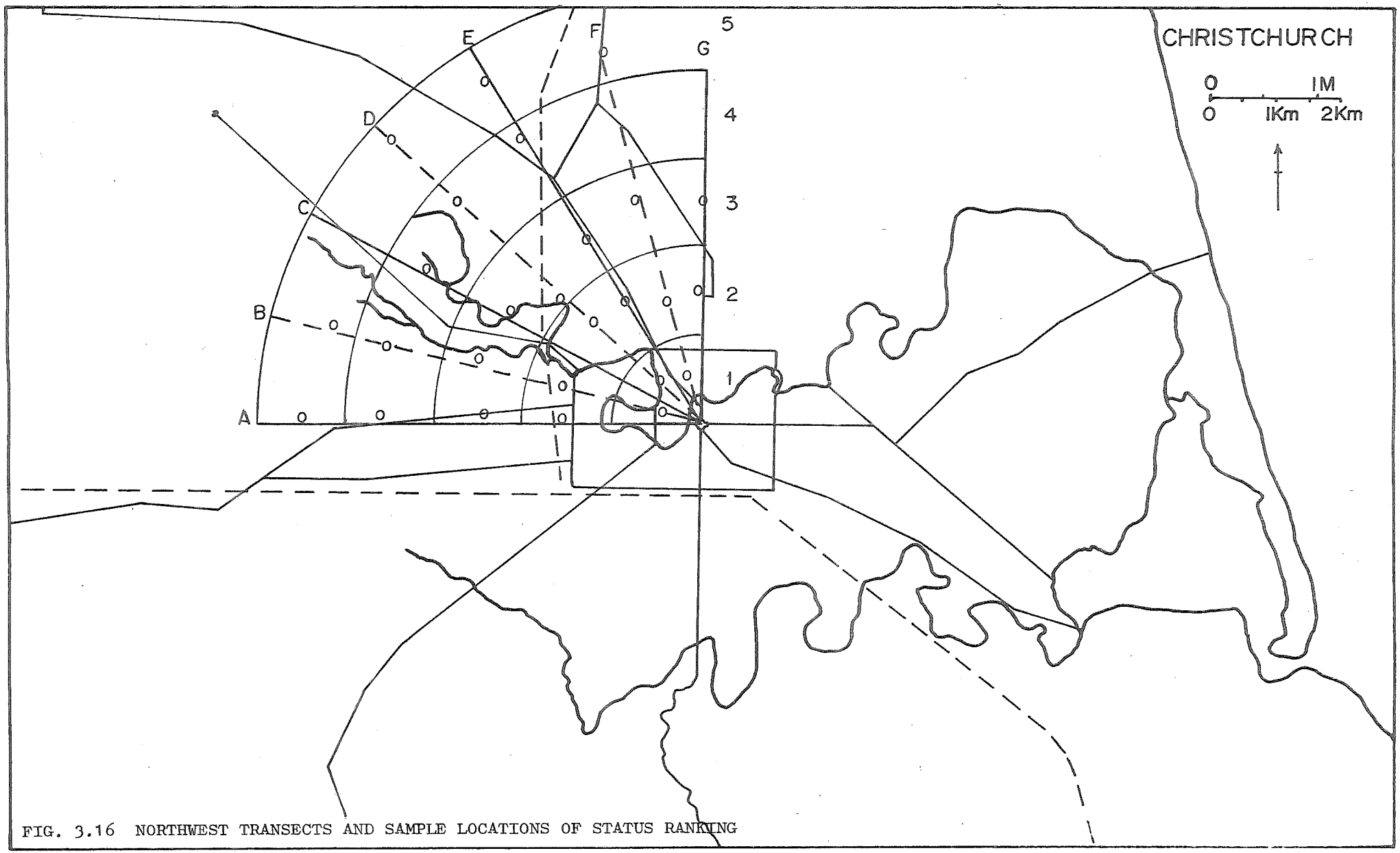

FIG. 3.16 NORTHWEST TRANSECTS AND SAMPLE LOCATIONS OF STATUS RANKING

TABLE 3.4 STATUS VARIATION ALONG TRANSECTS IN THE NORTHWEST QUADRANT: 1878--1973

	1878					1930					1973				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
	Nos.Z	Nos.Z	Nos.Z	Nos.Z	Nos.Z	Nos.Z	Nos.Z	Nos.Z	Nos.Z		Nos.Z	Nos.Z	Nos.Z	Nos.Z	Nos.Z
A	X	0				X	2-0.2	1-0.7	1-0.7		X	2-0.3	4+0.1	3-0.1	-
B	5+1.9	0				8+2.8	1-0.7	1-0.7	0		1-0.5	3-0.1	5+0.3	2-0.3	2-0.3
C	6+2.5	0				6+1.8	6+1.8	7+2.3	1-0.7		-	16+2.5	14+2.1	12+1.7	2-0.3
D	1-0.6	0				-	7+2.3	-	0		1-0.5	6+0.5	7+0.7	6+0.5	1-0.5
E	X	0				X	4+0.8	10+3.8	0		X	2-0.3	15+2.3	-	1-0.5
F	1-0.6	1-0.6				5+1.3	3+0.3	1-0.7	0		10+1.2	5+0.3	2-0.3	0	0
G	X	1-0.6				X	1-0.7	1-0.7	X		X	X	1-0.5	-	0
	$\bar{x}$ = 2.01(1)					$\bar{x}$ = 2.4					$\bar{x}$ = 3.5				
	S.D. = 1.6					S.D. = 2.0					S.D. = 5.0				

(1) $\bar{x}$ and S.D. computed for city wide areas with one or more professionals.

KEY: X = No sample location (but population present)

0 = No population therefore no sample at grid location.

- = No professionals at grid location.

It is evident from this data, that although the centre of the high status has moved outward, it has not kept pace with the general population expansion. The negative values of 1973, present on all sides indicate that the high status core forms a enclave within the northwest sector, surrounded by lesser social groups. The predicted outward progression of status was not present.

CHAPTER FOUR

PROCESSES OF HIGH STATUS AREA CHANGE:
with particular reference to 1920-1940.

Classical theory of residential structure places the city's highest status area on the urban periphery, maintaining the pattern through a process of outward migration. The impetus to move comes from a combination of factors, linked with dissatisfaction with the existing residential situation. Lowry (1960) and Grigsby (1966) have summarised and classified the causes of dissatisfaction in terms of obsolescence:

(i) style obsolescence - building design becomes unfashionable, thus its style as a status symbol declines,

(ii) building deterioration - the quality declines over time, requirring heavy maintenance costs and lowering the status,

(iii) technological obsolescence - the house no longer meets the demands of a different social and technological age especially in terms of layout, facilities and size,

(iv) locational obsolescence - the neighbourhood as a whole becomes less desirable, especially if inharmoneous elements or undesirable land uses are introduced,

(v) site obsolescence - the particular dwelling becomes undesirable, because of some adjacent use or user.

Grigsby (1966) suggested that style obsolescence is the most likely to initiate the filtering process - where the elite discard former fashionable residences which are bought by those of lesser means, who are able to move up the social scale

while the neighbourhood moves down. It was observed that building deterioration does not commence until after twelve years, technological obsolescence usually takes somewhere in the order of decades to become a significant factor, while changes in style may occur in a matter of years.

Burgess (1924) and Hoyt (1939) emphasised the role of locational obsolescence. It was noted that in America the social standing of a neighbourhood may rapidly decline, particularly if 'invaded' by Negroes or low socio-economic migrant groups.

> "The qualities that characterise an area.... spread into territory formerly occupied by a different population or function so that the newly occupied territory takes on, or threatens to take on the characteristics of the old" (Quinn 1950, 307).

Hoyt put the filtering process into spatial dimension when he noted that occupants move from the formerly fashionable neighbourhoods into,

> "new homes.....located as far away as possible.... from deteriorated areas.... usually erected on vacant land on the periphery of cities" (Hoyt 1939, 62).

The operation of the filtering process therefore results in fairly predictable spatial patterns; outward movement of high status areas, maintaining a peripheral location (forming a concentric zone in the Burgess model and a sector in the Hoyt model); regular abandonment of housing

on the inner zone of the high status area (zone of discard) and relocation in new homes on the urban periphery (zone of assimilation); a decline status of the abandoned area and a simultaneous increase in the growth area. These spatial patterns may be investigated to 'test' the validity of the filtering model using information on the actual status of areas over time and the movement of high status persons (Guest 1974, 23).

The present investigation focuses on the period between 1920 and 1940, since this period represented some of the crucial formative years of the contemporary high status area pattern. In addition one of the interests of this study is to investigate the processes related to one of the periods studied in detail (Chapters 2 and 3), previous studies have investigated the process in recent years (Johnston 1969) and data constraints precluded analysis prior to 1878, thus the period centring on 1930 was selected. The list of professionals gathered in the earlier study of 1930 was used in this analysis. Identification of the actual status of the areas over time and the movement of people, depended on establishing the residential address at 1920 and 1940 (1930 addresses were established earlier). Most addresses were collected from the relevant Wises directories, however a number could not be traced through this source, so that reference was also made to Who's Who in New Zealand, the medical and dental registers in the New Zealand Gazette, electoral rolls and telephone directories. Johnston (1969) suggested that the stage in the life cycle was an important variable influencing the nature of

movement within Christchurch, so to test this assertion the ages of the professional group were also sought. In some cases it was possible to establish the exact age, by consulting the Who's Who, however only a small proportion of the professionals were entered(1). However for many of the remainder an estimate of the age was attempted, based on the date of degree confirment or admittance to practice. This approach was particularly successful in the case of medical practitioners since the records were readily available and contained comprehensive information on the qualifications. The accuracy of the estimates were compared with the known ages obtained from Who's Who, the satisfactory results confirm the validity of such an approach (Table 4.1). The estimate of ages for the other degrees was a little more difficult to obtain, for example although the New Zealand Gazette included a register of practicing dentists in 1930, frequently a dentist would not have a degree but was admitted to practice after three years apprenticeship. This introduces a greater source of variance, since the apprenticeship may have been started early after leaving high school, or delayed. However in a sense variation in age estimates is not as serious as first thought since the age is used to relate to stage of life cycle, and this is as much related to the career as to the age of an individual. Finally, no acceptable register

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(1) All professors and a sprinkling of others particularly lawyers and doctors.

TABLE 4.1 AGE OF DOCTORS: 1930[1]

Doctors	Who's Who[2]	Register of Medical Practitioners[3]	Degree Source
H.T.D. Acland	56	56	Br.
P.A. Ardagh	43	43	N.Z.
P.C. Fenwick	60	60	Br.
J. Guthrie	55	52	Br.
G.M.L. Lester	59	50	Br.
T. Mill	52	52	Br.
A.J. Orchard	56	58	Br.

(1) The formula for estimating the age was to add 24 years (the average age) to the date of degree confirment.

(2) 1932 edition

(3) In the 1930 edition of the New Zealand Gazettee.

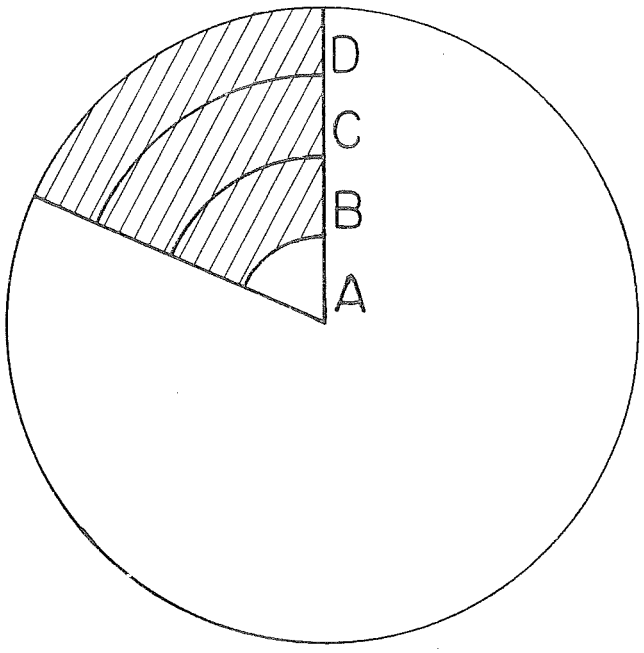
of either engineers or architects was available so these two professional groups were dropped from the analysis, leaving doctors, lawyers, dentists and professors, and out of the original data set in 1930, 106 names were eliminated either because their addresses could not be traced or because no estimate of age could be established, thus giving a 63% sample.

4.1 PROCESSES OF CHANGE WITHIN HIGH STATUS SECTORS: 1920-1940

(a) High Status Change

In terms of the filtering process it is expected that within the high status sector the central areas should decline (zone of discard) while the outer areas increase in social status and that the outer edge should exhibit the greatest relative increase - changes in social status being measured by relative changes in the distribution of professionals (Fig. 4.1). In order to investigate the spatial implications the high status sector in the northwest was divided into a series of five zones, equally spaced at intervals equivalent to a grid square (Fig. 4.2).

In 1920 the majority of professionals were fairly evenly distributed over the first three zones (Table 4.1A), the concentration in the next two periods shifting from the third to fourth zones, suggesting a wave-like pattern of



A ZONE OF DISCARD

B INNER ZONE

C INTERMEDIATE ZONE

D OUTER ZONE

} ZONES OF ASSIMILATION

FIG. 4.1 ZONES IDENTIFIED IN TESTING THE FILTERING PROCESS

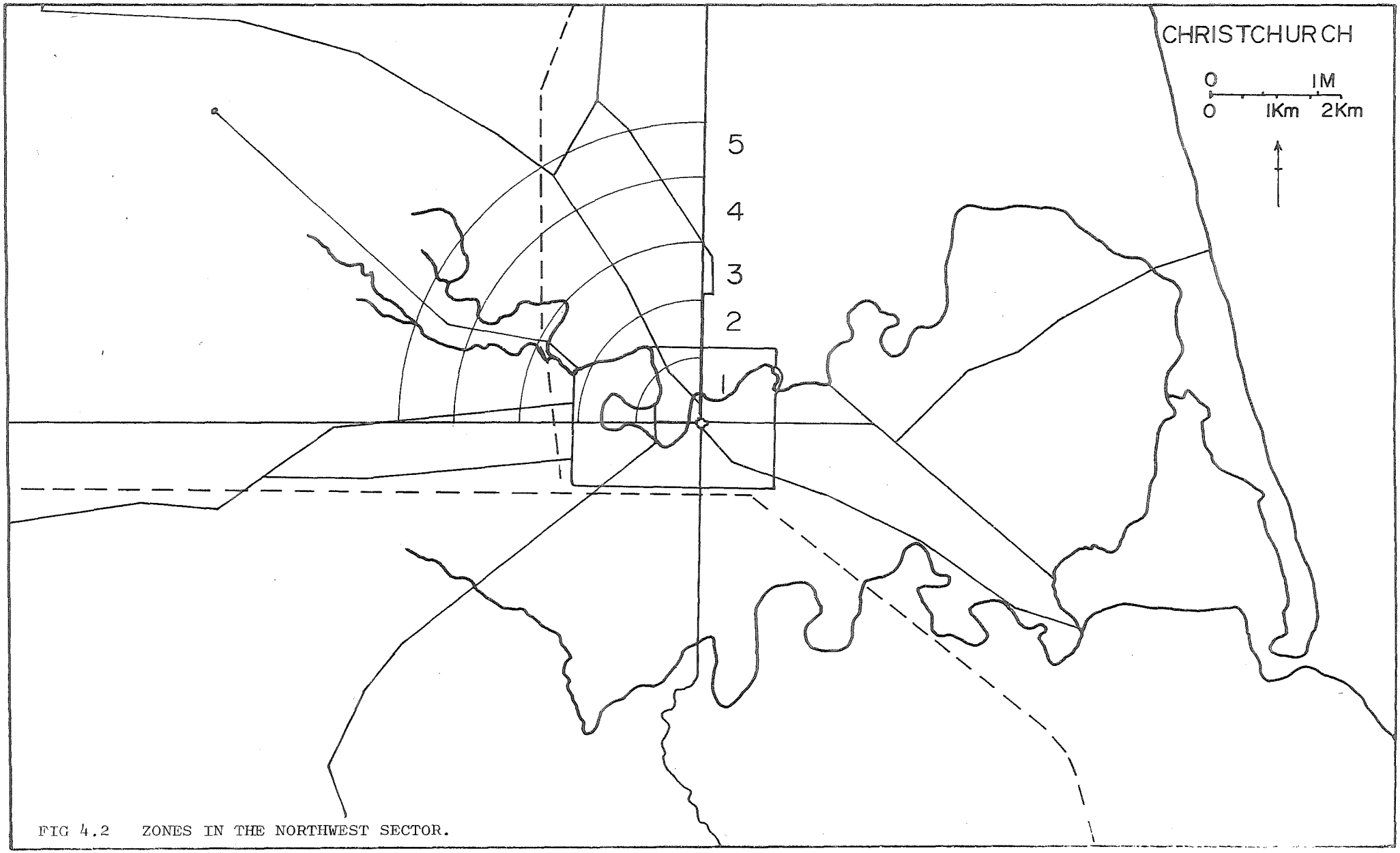


FIG 4.2 ZONES IN THE NORTHWEST SECTOR.

TABLE 4.1A DISTRIBUTION OF PROFESSIONALS IN THE NORTHWEST 1920-40

(A)

Zones (1)	1920 Nos.	1920 %	1930 Nos.	1930 %	1940 Nos.	1940 %	1920 -30	1930 -40
1	14	(28.6)	16	(15.8)	12	(15.8)	-12.8	-0.0
2	11	(22.4)	13	(12.8)	8	(10.5)	-9.6	-2.3
3	16	(32.7)	37	(36.9)	22	(28.9)	+4.2	-8.0
4	7	(14.3)	28	(27.8)	31	(40.8)	+13.5	+13.0
5	1	(2.0)	7	(6.7)	3	(4.0)	+4.7	-2.7
TOTAL	49	(100)	101	(100)	76	(100)	±22.4	±13.0
New Sector	49	(55.7)	101	(61.0)	76	(73.8)	+5.3	+12.8
Remainder of City	39	(44.3)	65	(39.0)	27	(26.2)	-5.3	-12.8
Entire City	88	(100)	167	(100)	103	(100)	±5.3	±12.8

(B)

Zones	% 1920	1930	1940
1 and 2	51.2	28.6	26.3
3	32.7	36.9	28.9
4 and 5	16.3	34.5	44.8

(1) See Figure 4.2

distribution change. Thus if a number of the zones are grouped (Table 4.1B) it is evident that the majority concentration moved from zones 1 and 2, to 3 and finally zones 4 and 5 at each respective period (Table 4.1B)(1). These are significant moves suggesting important relative social changes between zones. In the first period the central zones (1 and 2) indicated considerable declines (therefore zones of discard) while the outer three zones experienced increases in relative status (zones of assimilation), with zone four showing the greatest increase (Table 4.1A). This pattern of change appears to conform fairly closely to the expected pattern if the filtering process were operating, with a gradation from the centre out of decreasing social decline through to increasing social status in zone four which in 1930 may be accepted as the periphery of the high status area since only 6.7% of the professionals live beyond.

However, the situation is quite different in the second period, and contradicts the predicted pattern of change on four points; the stability of the central zone, the single restricted zone of assimilation, the fact that greatest decline was experienced in a zone adjacent to the zone of assimilation, and finally the outer zone of discard. The pattern may be described in terms of stability and consolidation, with the

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(1) Significant name-like changes are suggested, however it would require a study at two or three year intervals to adequately test whether this is due to short migration steps; the present study taking movement between a 10 year interval may miss intermediate steps.

central area halted or greatly reduced and declined, balanced by consolidation in zone four (Fig. 4.5), the 'core' of the high status area with over 40% of the northwest elite. The difference in social area change between the two periods is reflected in the total percentage change; 22.4% in the first or 2.2% p.a. and 13.0% or 1.3% p.a. in the second period. This consolidation and slight retrenchment in outward growth, may in part be explained by the economic conditions for much of the decade, the depression in general and shortage of housing finance in particular meant that few were in a position to move and still less could build. The 1920's in contrast were a period of expansion and innovation - the emphasis on technical features and 'modern' styles in newspaper property advertisement suggests a period of rapid stulistic, technological obsolescence and perhaps building deterioration in addition to the greater locational opportunities offered by the extensive tramway network.

(b) Sector Migration of the Elite

The pattern of change observed during the first period suggests a reasonable operation of the filtering process, the question arises of the role of migration in the pattern of change. The direction of movement was recorded, however it is often difficult to make comparative analysis on the basis of map observations, therefore simple tabulation of the movement in the framework of the 5 zones (Fig. 4.2) was introduced to simplify the apparent confusion (Fig. 4.6; 4.7).

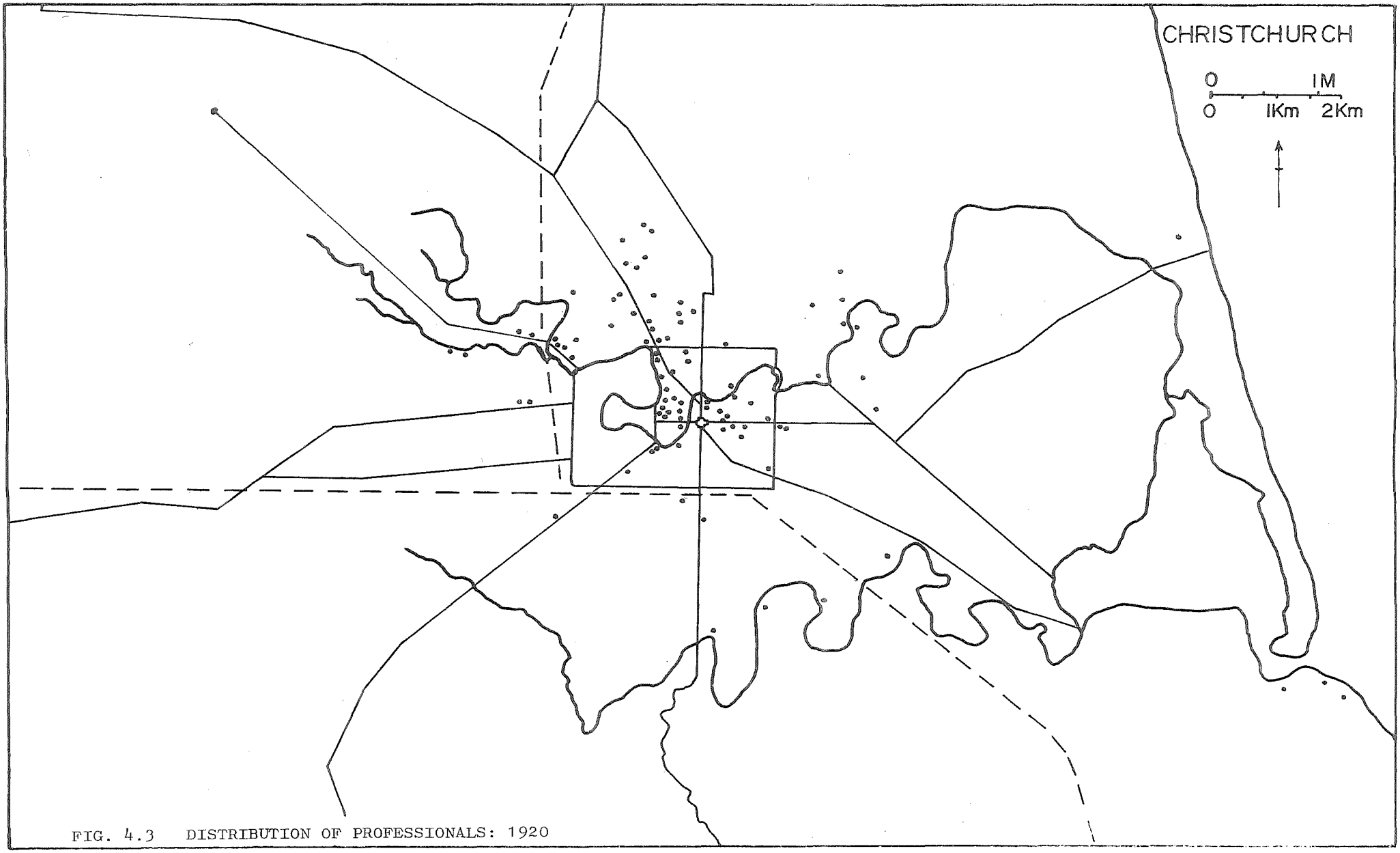

FIG. 4.3 DISTRIBUTION OF PROFESSIONALS: 1920

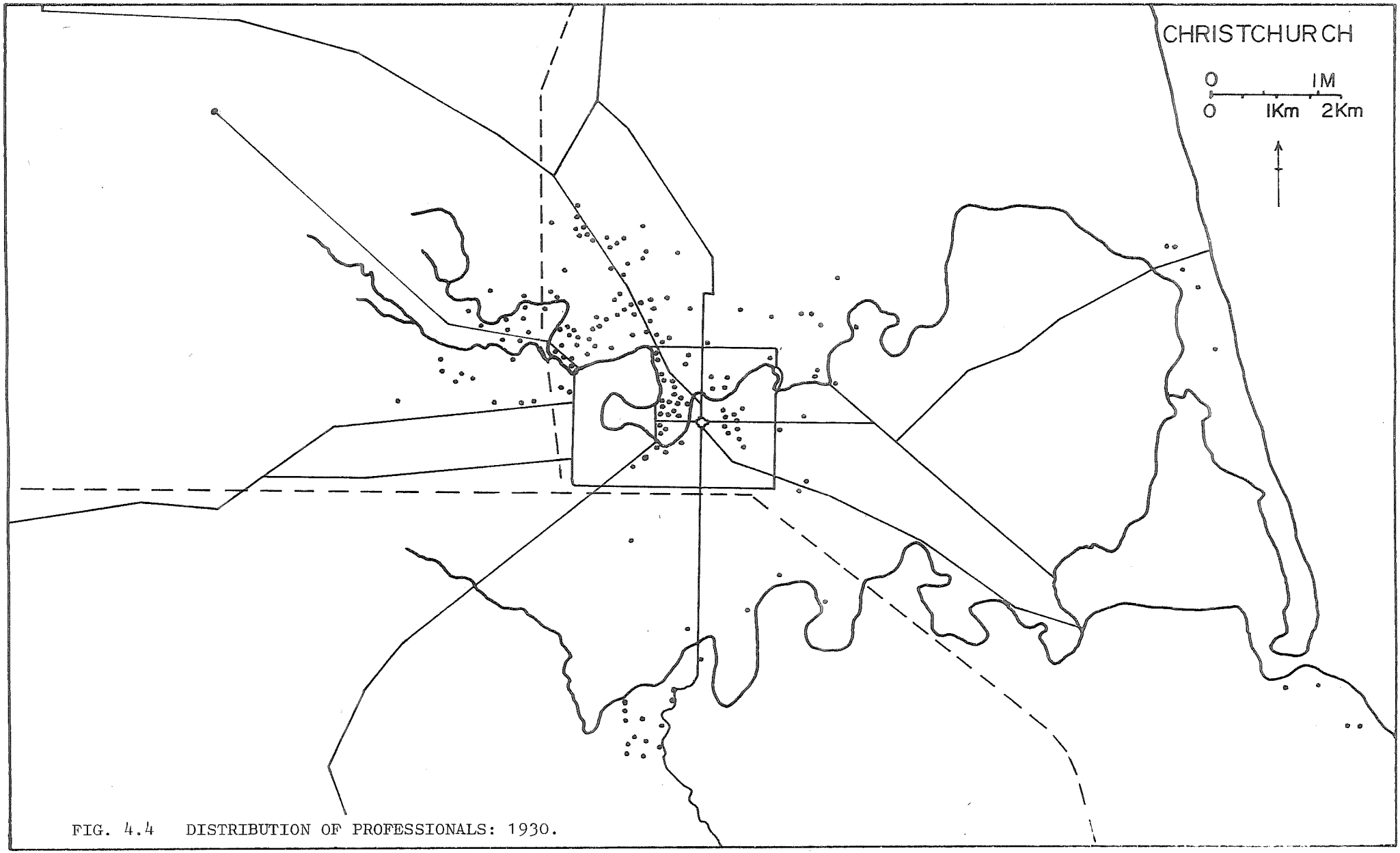

FIG. 4.4 DISTRIBUTION OF PROFESSIONALS: 1930.

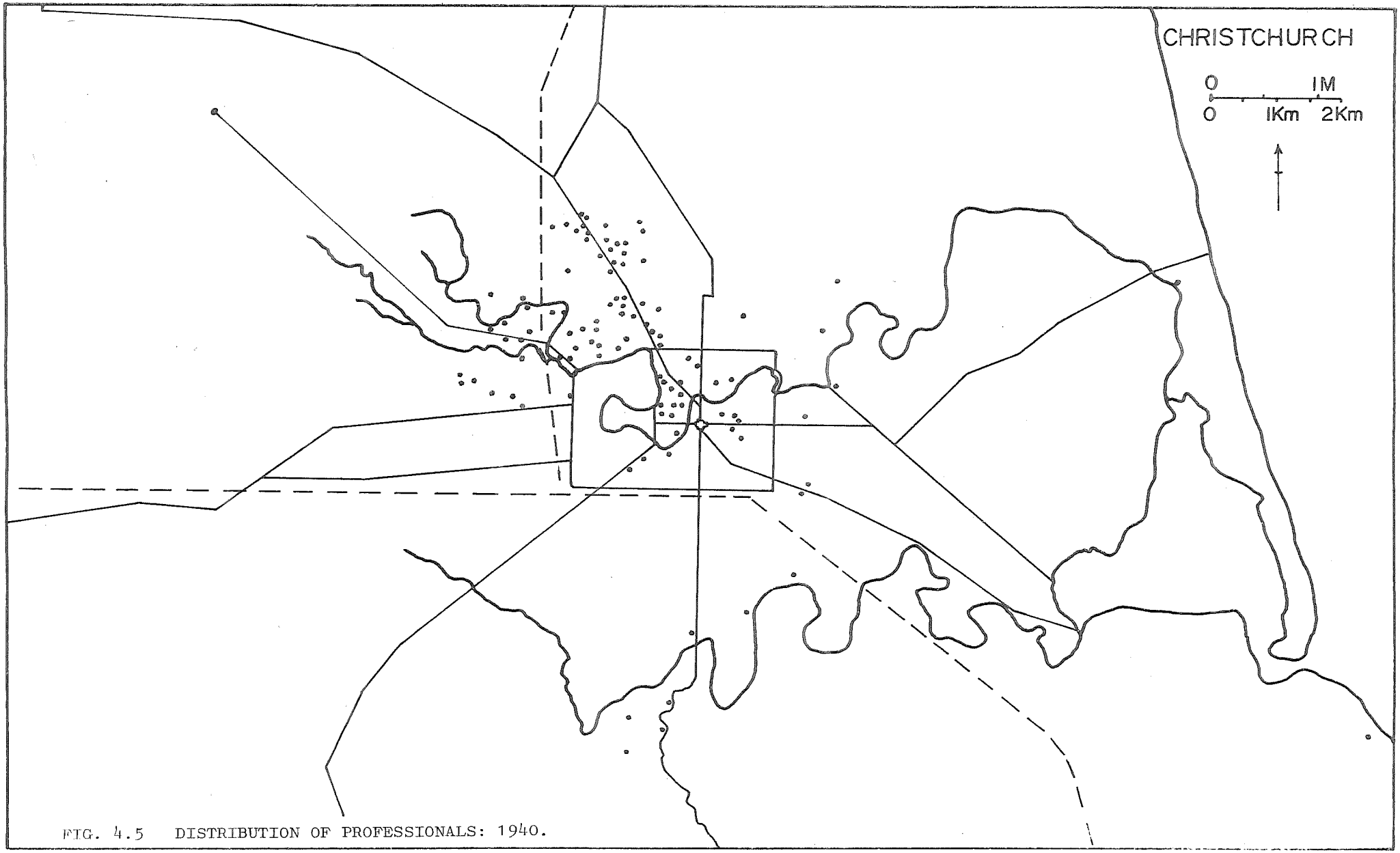

FIG. 4.5 DISTRIBUTION OF PROFESSIONALS: 1940.

The observed migration patterns in the first period (Fig. 4.6) indicate less conformity to the expected, than the earlier analysis of social area change indicated. For example the dominant movement was not outward - only 39%, but reorganisation within the home sector, 50% of all moves within the sector (Table 4.2), and of the outward moves only 17% moved more than two years. There is little evidence of movement from the zone of discard to the outer zones of assimilation, only two of the total number of moves (17) moved from the zone of discard to zone four - identified earlier as the outer area of assimilation. In addition the most important origin area was not the zone of discard but zone three (Table 4.2), and in line with an earlier comment on the short nature of moves, 50% of the moves originating in the zone remained in the same zone. However there is at least partial fulfilment of the filtering process since only 11% of all moves were inward and furthermore one of the migration groups identified in the Burgess-Hoyt model were those who because of accumulated wealth were able to afford a home higher up the social scale they moved into the homes abandoned by other elite, instead of building on the periphery. It is possible that such a group dominated the migration process of 1920-30, there was no compelling locational obsolescence occurring in the central area but the opportunity for social area advancement may have been taken when increased wealth permitted. Unfortunately the data available in the present study does not allow these suggestions to be investigated since there is no information on the nature of the homes or the areas abandoned or moved to.

FIG. 4.6 MIGRATION: 1920 - 1930.

TABLE 4.2 MIGRATION IN THE NORTHWEST SECTOR: 1920-30

			DESTINATION Numbers				
		Zones	(1&2)	3	4	5	TOT
O	Discard	(1&2)	1	2	2	-	5
R		(3)	2	5	2	1	10
I		(4)	-	-	1	-	1
G	Assimila-tion	(5)	-	-	-	2	2
I							
N		TOT	3	7	5	3	18

SUMMARY STATISTICS:

Movement	Nos.	%
Outward	7	39
Home Area	9	50
Inward	2	11
TOT	18	100

Movement	Nos.	%
Home and adjacent zones	15	83
More than 2 zones	3	17
TOT	18	100

In view of the lack of outward social area change for 1930-40 observed earlier, little outward migration would be expected. The migration pattern (Fig. 4.7) confirms the earlier trends, for example only one migrant or 9% of all movers shifted from the zone of discard to the zone of assimilation (Table 4.3). As in the first period most moved within the home-zone, while 36% actually moved inward. Thus in many respects the migration trends go against those of social area change observed earlier, for example the zone of discard recorded a percentage decline of 10.3%(1) (Table 4.1) yet the same area recorded a net gain in migrants, at the same time the zone of assimilation experienced a social area increase of 10.3% yet recorded a net loss in migration.

It is clear that the migration links with the rest of the city are important in determining the pattern of social area change in the northwest sector, since the patterns of social area change resulting from migration are often at variance with the final social area change. This divergance is particularly evident in the second period, for example the zone of discard showed a net distribution loss of 10.3% yet an increase of 9.0% resulting from migration changes within the sector, with the direction of change reversed in the zone of assimilation (Tables 4-4B).

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(1) A high figure in view of the total change of ± 12.8%.

TABLE 4.3 MIGRATION IN THE NORTHWEST SECTOR: 1930-40

ORIGIN		DESTINATION Zones	(1, 2 & 3)	(4, 5)	Numbers
	Discard	(1,2,3)	3	1	4
	Assimila-tion	(4,5)	2	5	7
		TOT	5	5	11

SUMMARY STATISTICS:

Movement	Nos.	%
Outward	1	9
Home Area	6	55
Inward	4	36

Movement	Nos.	%
Home and adjacent zones	10	91
More than 2 zones	1	9

TABLE 4.4 SECTOR CHANGE IN THE DISTRIBUTION OF PROFESSIONAL AND MIGRATION 1920-40

(A)

Zones	1920-30 (%) Net Distribution Change	Net Migrant Change	Zones	1930-40 (%) Net Distribution Change	Net Migrant Change
1	-12.8	-16.6	1	0.0	0.0
2	- 9.6	+ 5.6	2	-2.3	0.0
3	+ 4.2	-16.6	3	-8.0	+9.0
4	+13.5	+22.2	4	+13.0	+18.3
5	+ 4.7	+ 5.6	5	-2.7	-27.3
TOTAL	±22.4	±33.4	TOTAL	±12.8	±27.3

(B)

1 and 2	-22.4	-11.0	1,2 and 3	-10.3	+ 9.0
3	+ 4.2	-16.6			
4	+13.5	+22.2	4 and 5	+10.3	- 9.0
5	+ 4.7	+ 5.6			

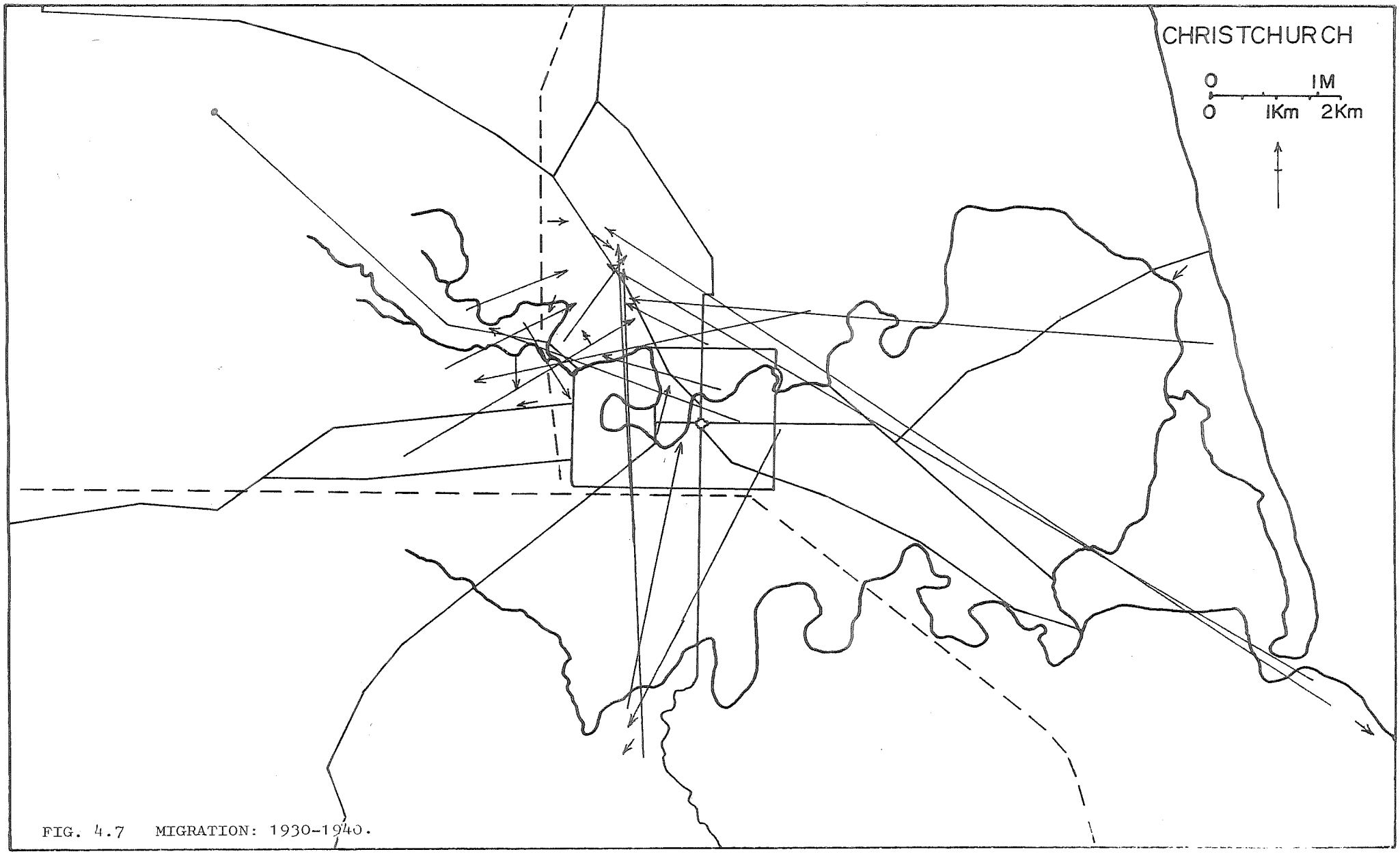

FIG. 4.7 MIGRATION: 1930-1940.

4.2 PROCESSES OF CHANGE WITHIN THE ENTIRE CITY: 1920-40.

(a) Social Area Change

Although it has become evident, that the filtering process of the high status area formation, within the dominant high status sector appears to play a minor role, it is possible that the concepts may hold true in the wider Christchurch situation. The NW represented the most important single high status area, but many of the elite lived outside its boundaries and much of the migration either had links with the outside areas or took place completely elsewhere within the city. Table 4.5 for example, varifies that although the northwest sector dominated at each time period, significant numbers of professionals, 44% of the total in 1920, for example lived elsewhere, and that migration was either outside or represented a link between the northwest and elsewhere. During 1920-30, 39% of the movement was confined to the northwest, with 41% having contact elsewhere; this contact elsewhere continued to remain at 41% although in common with the high status distribution trends, the northwest increased its dominance in the migration pattern. Therefore, in view of the importance of the remainder of the city, in both high status distribution and migration, attention will be focused on the operation of the filtering process in the wider area.

Interpretation of change from the distribution maps of Figures 4.3 - 4.5 is different, thus simple tabulation was again employed. In addition to the central city area, a

TABLE 4.5 PROFESSIONAL AND MIGRANT DISTRIBUTIONS

DISTRIBUTION

Area	1920 %	1930 %	1940 %
Northwest sector	56	61	73
Other	44	39	27
TOTAL	100	100	100

MIGRANTS

Area	1920-30 %	1930-40 %
Northwest	39	45
Northwest/ other	41	41
Other	20	14
TOTAL	100	100

TABLE 4.6 DISTRIBUTION OF PROFESSIONALS

Area	%						
	1920	1930	+	-	1940	+	-
Central 1	42	26	-	16	23	-	3
Fendalton 2	10	17	7	-	16	-	1
Merivale 3	3	8	5	-	16	8	-
St Albans 4	12	8	-	4	6	-	2
Papanui 5	8	12	4	-	22	10	-
Riccarton 6	2	4	2	-	3	-	1
Cashmere 7	-	8	8	-	4	-	4
Hills 8	3	2	-	1	1	-	1
Ilam 9	-	2	2	-	-	-	2
Other	20	13	-	7	9	-	4
TOTAL	100	100	28	28	100	18	18

number of fashionable suburban areas were identified, with the selection of these broad areas being based on the distribution of professionals as established in the high status pattern study of Chapter 2 and the earlier mentioned social area-migration study. The basis of boundary delineation was:- the census tracts used in the 1971 census, local street directions, and a knowledge and understanding of local neighbourhood areas (Fig. 4.8)[1]; with a high percentage of the professionals being included in these areas, 80% in 1920, 87% in 1930 and 91% in 1940 (Table 4.6).

Operation of the filtering process would be indicated by a decline in central area status, and an increase in the peripheral area status. The relative importance of these high status areas is indicated in Table 4.6, with the central city area retaining its dominant position during the three time periods, but its relative importance showing a marked decline, especially between 1920 to 1930. A decline of this magnitude, 19% over two decades, of the central area, in view of the filtering hypothesis may be expected, but not so the retention of this dominance so long after its initial formation, a period of some 80 to 90 years later. Progression of the central area, in terms of status, from one of unquestioned

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(1) A 10th area, Avonhead, has been included in later analysis of a similar nature.

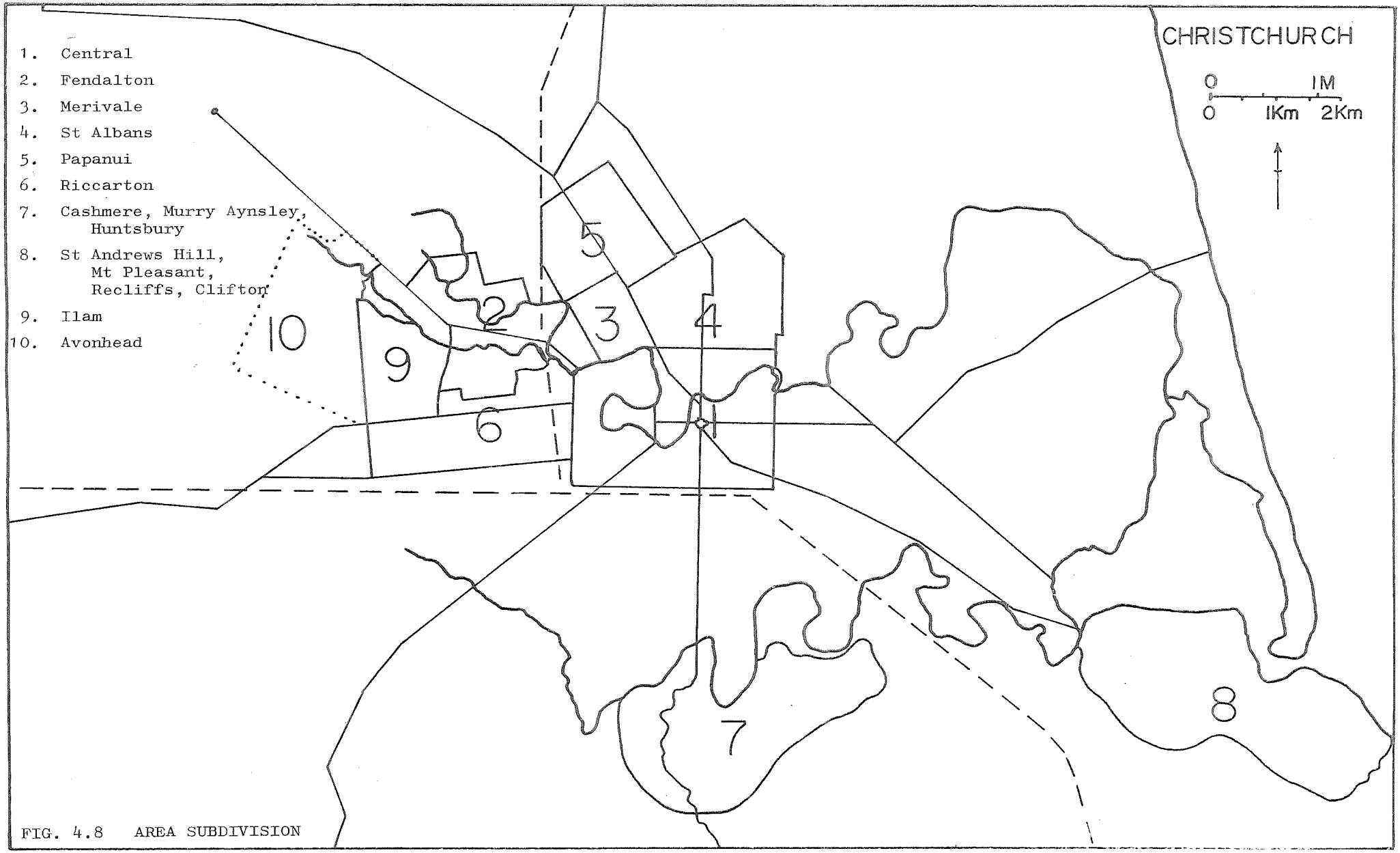

FIG. 4.8 AREA SUBDIVISION

dominance in 1878, to that of relative insiginificance in 1973[1], is shown in Table 4.7. The remaining areas, of the formerly high status, are centred around Latimer and Cranmer Squares.

Outward extension was very much in evidence during 1920 to 1930, with all areas except the city central, St Albans and the Hills experiencing increased concentrations of professionals. Areas of marked increases were the outer region of Cashmere and inner regions of Merivale, Papanui and inner Fendalton.

The pattern of change during the period 1930-40 was less straight forward. The central area continued to decline, though at a much reduced rate, likewise St Albans and the Hills showed slight declines in their relative status positions. However, the growth of Fendalton, Riccarton and Ilam was checked, with slight declines in relative positions being recorded. The only areas to increase their standing were Papanui and Merivale.

(b) Migration of the Elite

The distribution pattern of the elite follows closely those observed earlier in the northwest sector high status

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(1) Accepting of course that there is a scale problem, the central area in 1878 represented a large proportion of the population, but a small proportion in 1973; therefore it is possible for the proportions of professionals to decline in the central area without an actual decline in absolute numbers.

TABLE 4.7 DISTRIBUTION OF PROFESSIONALS(1)

	%						
	1878	1900	1910	1920	1930	1940	1973
Central	71	43	44	42	26	23	3
Other	29	57	56	58	74	73	97
TOTAL	100	100	100	100	100	100	100

(1) The data for 1878 and 1973 was drawn from the high status pattern study of Chapter 1, while the remainder has been taken from the distribution of professionals computed in the present migration study.

distribution analysis, with the evident trends of this sector reflecting the changes in the wider Christchurch area. The question remains however, as to whether the city wide migration pattern follows the now clearly defined trend, or conforms more closely to the filtering process hypothesis.

Table 4.8 indicates that the city wide migration trends of the 1920's to 1930's (Figs. 4.6; 4.7) closely resembles those trends identified in the sector migration patterns of Table 4.6. Outward migration increased, with the city central area moves, that of 39%, being greater than any other area. Distinction was fairly evenly spread amongst the other areas, with the majority, 11 of the 17 moves of other areas being to the northwest sector. Only 2 however, moved from the northwest to other high status areas; likewise 2 only, moved from the extreme peripheral areas to a more central location.

Table 4.9 indicates little evidence of a consistent outward migration process during the 1930-40 period. Central area decrease no longer dominated, as only 4 or 16% of the total moves were from this sector, with 3 of these moves being almost adjacent, in the northwest. Reorganisation within the northwest sector was indicated, with no outward migration to either the Hills or Cashmere; indeed the reversal was evident, with 3 leaving these areas for the northwest.

TABLE 4.9 MIGRATION BY AREAS (City wide)

1930-40

	DESTINATION										
	1	2	3	4	5	6	7	8	9	OTH	TOT
1	1	1	2								(16) 4
2		2			2	1					(18) 5
3		1									(4) 1
4											-
5			1		2	1					(16) 4
6											(4) 1
7	1				1		1				(11) 3
8					2			1			(11) 3
9											-
OTH		1	1		1		1			1	(18) 5
TOT	2 (8)	5 (18)	4 (16)	-	8 (31)	3 (11)	2 (8)	1 (4)	-	1 (4)	26 (100)

TABLE 4.8 MIGRATION BY AREAS[1]

1920-30

		DESTINATION										
		1	2	3	4	5	6	7	8	9	OTH	TOTAL
ORIGIN	1	3	3	3	2	3	-	3	1	-	1	(39) 20
	2	1	6									(14) 7
	3			1								(2) 1
	4	1								1		(4) 2
	5			1	1	1		1				(8) 4
	6											-
	7											-
	8	1	1									(4) 2
	9									1		(2) 1
	OTH	1	1	-	1	1	2	1			7	(28) 14
	TOT	8 (16)	11 (22)	5 (10)	4 (8)	5 (10)	2 (4)	5 (10)	1 (2)	2 (4)	8 (16)	51 (100)

(1) (FIG 4.8)

(c) Social Area Change: Colonisation and Abandonment

Basic trends, in social area change may be reflected in the pattern of new grid squares 'colonised' by the arrival of at least one professional, where there was previously none, or the 'abandonment' of an area due to the loss of all the elite. The basic patterns observed earlier are evident; the first period, 1920 to 1930 experiencing expansion with 14 new squares added and 4 only abandoned, while the second period, 1930 to 1940, experienced retrenchment with no new areas being colonised, but 7 areas abandoned (Figure 4.9). Colonisation of the new areas during the first period was scattered almost randomly around the existing high status area and the Cashmere Hills; similarly tht abandoned areas of the second period were widely scattered, with perhaps some bias towards the western perimeter of the wider high status area (Figure 4.9).

(d) Direction of City Wide Moves

Further generalisation of the migration data involves the determination of the direction of residential moves. It is evident from Table 4.10 that the fundamental differences between the period of 1920-30 and 1930-40 indicated earlier in this study, are reflected in the direction of movement. During the 1920-30 period, outward movement was dominant (44% of the total moves), with the majority moving to the high status areas previously recognised. At the same time, a significant proportion, 21%, have moved inward, with an even greater number, 35%, migrating across the city. Between 1930-40, less than one third moved outward, and all to high

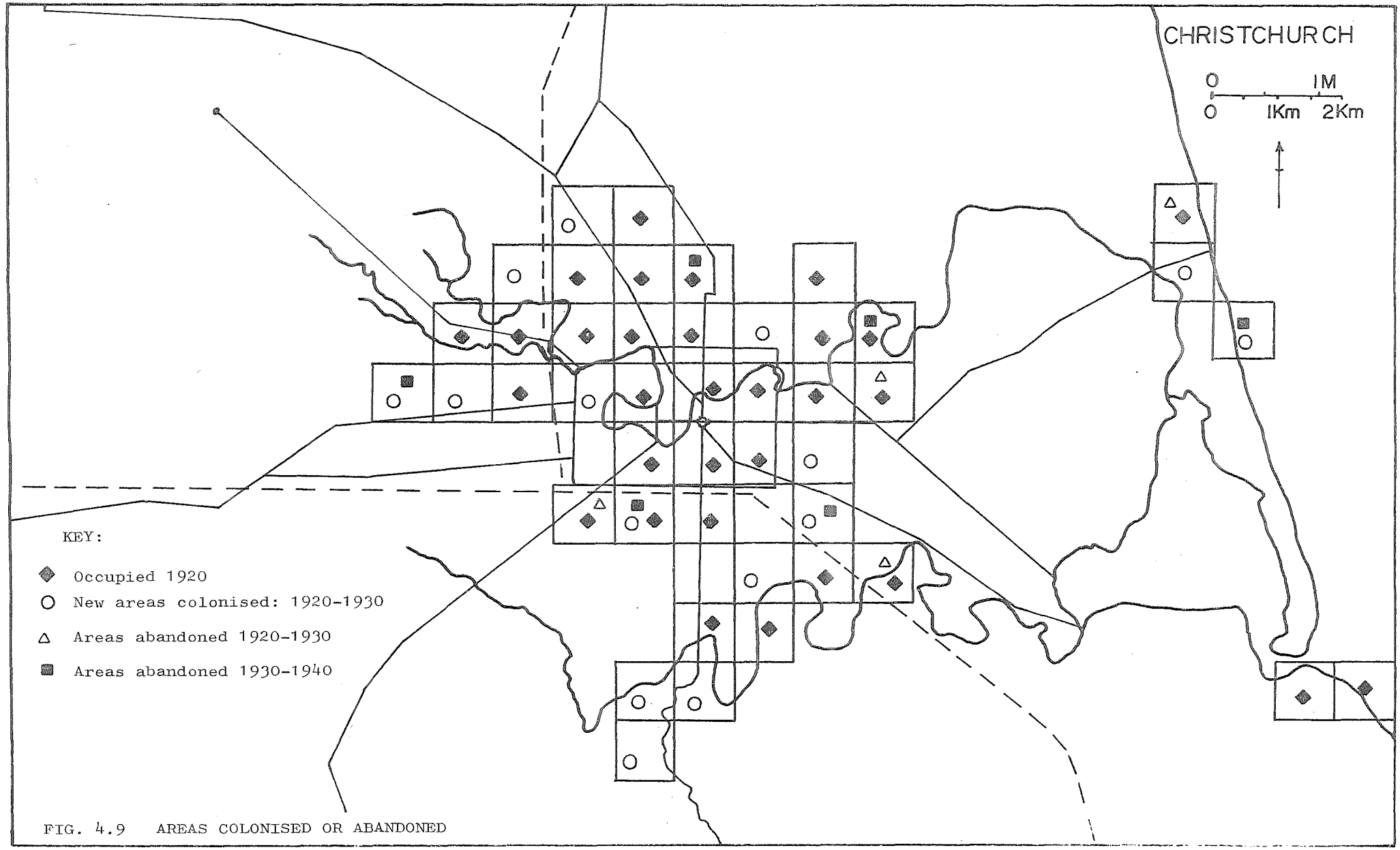

FIG. 4.9 AREAS COLONISED OR ABANDONED

TABLE 4.10 DIRECTION OF CITY WIDE MOVES

	1920-30				1930-40		
	To H/S	To OTH	TOT		To H/S	To OTH	TOT
OUT	(38)	(6)	(44)	OUT	(29)	-	(29)
	20	3	23		8		8
IN	(17)	(4)	(21)	IN	(21)	-	(21)
	9	2	11		6		6
ACROSS	(22)	(13)	(35)	ACROSS	(36)	(14)	(50)
	12	7	19		10	4	14
TOT	(77)	(23)	(100)	TOT	(86)	(14)	(100)
	41	12	53		24	4	28

status areas; a comparison with the equivalent percentage of inward moves during the earlier decade. Migration across the city greatly increased to that of 50% of all movers.

These trends tend to confirm earlier specifications that the 1920-30 period was one of much greater outward mobility than the second period of 1930-40, which was characterised by greater residential reorganisation and consolidation in the previously established high status areas.

(e) The Importance of Migration Amongst Professionals

The study this far has demonstrated the relatively unimportant role of migration in the process of social area change in Christchurch. Johnston (1969), concluded that migration appears to be relatively unimportant among the Christchurch elite. However the pattern of change and migration appeared to be significantly different between the 1920-30 and 1930-40. The question now arises as to how the levels of migration found in these decades compare with the findings of others.

Fairbairn (1963) in a study of population movements in Christchurch in 1959, demonstrated that about 6% of all households changed their address during that year. Johnston (1969) found that 54% of the elite changed their address at least once during the period 1951-64. Table 4.11, indicates 57% of professionals moved between 1920-30, but only 28%

TABLE 4.11 MOVER/NON-MOVER

	1920-30		1930-40	
	Nos.	%	Nos.	%
Mover	53	(57)	30	(28)
Non-Mover	40	(43)	77	(72)
TOTAL	93	(100)	107	(100)

between 1930-40. These figures indicate that the movement of professionals in the decade 1920-30 was roughly comparable to the rate found by Fairbairn, 6% p.a. compared to 5.7% p.a., both significantly higher than the rate found by Johnston, aprroximately 4%. The rate for the 1930-40 period, as compared with those of other periods was very low, less than 3% per year, which was no doubt due to the effects of the world-wide depression.

4.3 A COMPARISON WITH JOHNSTON'S STUDY: 1951-64.

Johnston (1969), conducted a similar social area change-migration study on Christchurch for the period 1951-64, in which he identified two main trends, firstly a movement into the hills suburbs, and secondly, a slow outward migration to the northwest (Johnston 1969; Fig. 1.4). He concluded that migration appeared to be relatively unimportant...."there is little evidence that the observed pattern.....is the product of migration" (Johnston 1969, 7).

To provide a better backdrop against which the results of the 1920-40 study may be compared, the 1951-64 migration data was subjected to a number of the tabulation procedures used in the 1920-40 study (Fig. 4.10).

In the analysis of the northwest sector movement - Table 4.12, it became evident that zones 1 and 2 combined is

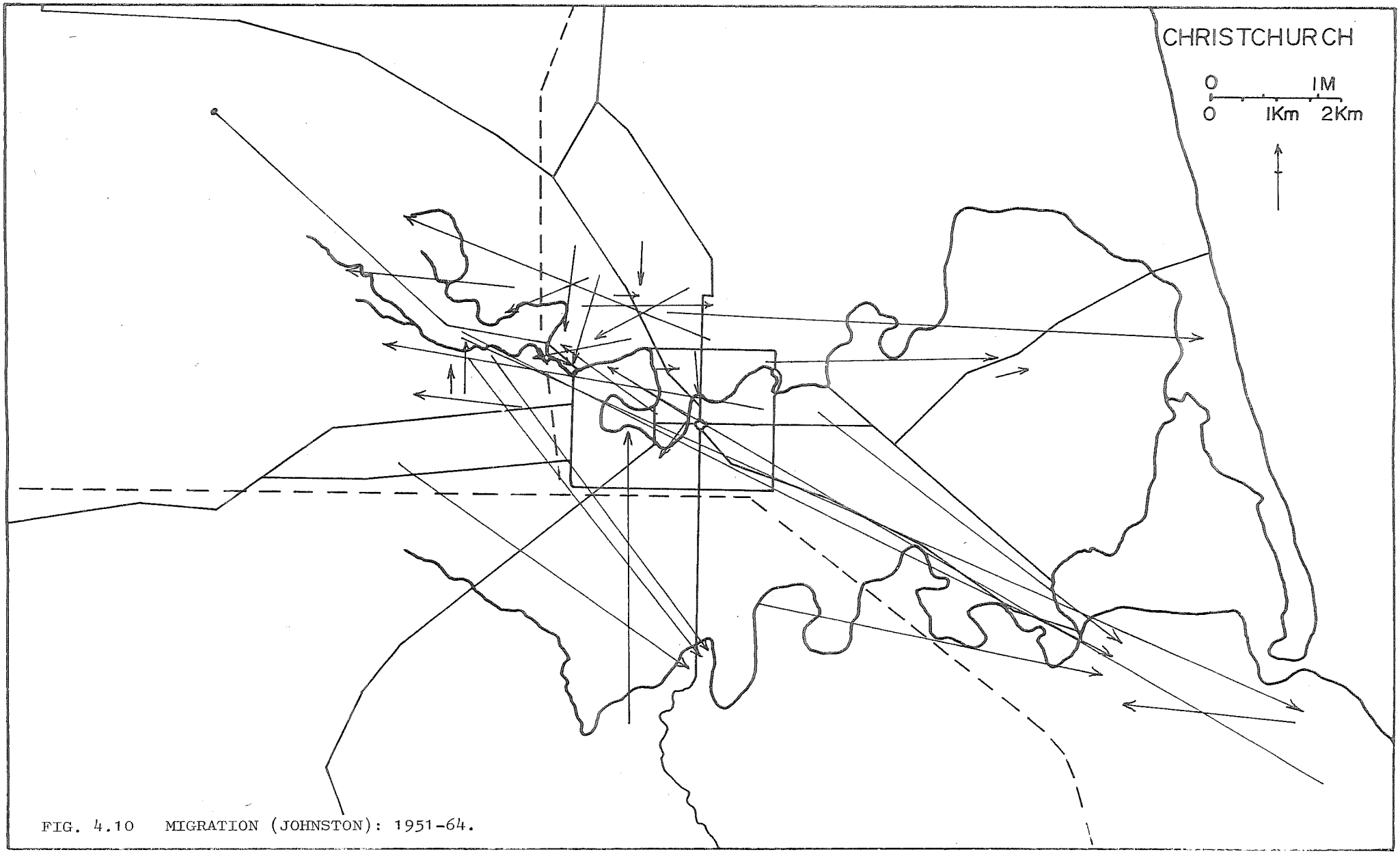

FIG. 4.10 MIGRATION (JOHNSTON): 1951-64.

TABLE 4.12 MIGRATION IN THE NORTHWEST SECTOR: 1951-64

		DESTINATION							
	Zones[1]	1	2	3	4	5	beyond	OTH	TOT
	1			1				1	2(6)
O	2	2	1	1				1	5(16)
R	3			4		1			5(16)
I	4			2	2		1	2	7(22)
G	5					1		2	3(9)
I	beyond								
N	OTH		2				1	7	10(31)
	TOT	2	3	8	2	2	2	13	32
		(6)	(9)	(24)	(6)	(6)	(6)	(41)	(100)

DIRECTION OF MIGRATION:

	Nos.	%
Outward	4	25
Home Area	8	50
Inward	4	25
TOTAL	16	100

(1) (FIG 4·2)

still a significant contributing area as it was in the period 1920-40 (Tables 4.2 and 4.3); likewise, zone 3 continues to be an important origin area, as it was, especially in the 1920-30's period (Table 4.2). The single most important source area for migrants during the period of 1951-64 however, was zone 4, which was insignificant during the 1920-30 period, but dominant during the 1930-40's. During the 1930-40 period, three quarters of the movers remained in the same zone (4) but during 1951-64 only 2 out of 7 remained. This does not eliminate residential reorganisation however, as 4 of the 5 originating from zone 3 remained in the same zone.

Summary statistics show that 1920-30 was the most important outward moving period, with 39% moving outward during this period, compared with 9% during 1930-40, and 25% in the 1951-64 period. Due to the proportion of those remaining in their home area stabilising around 50%, the converse situation existed for inward movement, with this inward movement reaching a peak of 36% during the 1930-40's.

Table 4.13 illustrates the nature of the northwest sector social area change, for 1951-64, with the pattern showing little conformity with that predicted by the filtering hypothesis. Only zones 3 and 'beyond' showed an increase, while the innermost area remained stable and zones 2, 4 and 5 showed declines. A comparison of these changes with those of the 1920-30's and 1930-40's (Table 4.1) show that in general there is a close resemblance between those of 1951-64 and 1930-40.

TABLE 4.13 DISTRIBUTION OF ELITE IN THE NEW SECTOR: 1951-64

Zones	1951 Nos.	1951 %(1)	1964 Nos.	1964 %	Change Nos.	Change %
1	2	(9.1)	2	(10.5)	-	+ 1.4
2	5	(22.7)	3	(15.9)	-2	- 6.8
3	5	(22.7)	8	(42.1)	+3	+19.4
4	7	(31.8)	2	(10.5)	-5	-21.3
5	3	(13.7)	2	(10.5)	-1	- 3.2
beyond	-		2	(10.5)	+2	+10.5
TOT	22	(100.0)	19	(100.0)		±31.3
Elsewhere in the city	10	(31.2)	13	(40.6)		
Entire City	32		32			

(1) % of total in the northwest only.

The city wide migration composition of 1951-64 with the previous periods reflects previously identified trends (Table 4.14). Outward movement was experienced, especially from the city central and Fendalton, with 5 persons, or 15% moving from those areas to the fringe high status areas of Cashmere, Hills, Ilam and Avonhead, which represented something of a departure as although outward movement was observed in the earlier period of 1920-40, this was mainly confined to the previously established outer areas of the northwest sector, (and Cashmere-Hills during the 1920-30's). In the 1951-64 trend, the established outer areas of the northwest (St Albans, Papanui and Riccarton), received no migrants from central Fendalton (Table 4.14), however, there was movement in the opposite direction, 3 moving from Papanui to Fendalton. Lateral movement was also observed, for example 3 moved from Merivale to St Albans (1951-64, Table 4.14). Evident also was the home area reorganisation observed in the earlier studies - Tables 4.8 and 4.9. Comparison of the 3 periods show that the majority of reorganisation was during the 1930-40 period, with 27% of all movers remaining in their home area, as compared with 24% during 1920-30 and only 19% during the years 1951-64. Therefore, if Johnston's conclusion of "a complex reorganisation of the elite residences within the zone of discard and core rather than an outward progression..." applies to the 1951-64 period, then it applies more so to the earlier period.

TABLE 4.14 ORIGIN AND DESTINATION OF ALL RESIDENTIAL MOVES BY THE CHRISTCHURCH ELITE 1951-64

ORIGIN	DESTINATION 1	2	3	4	5	6	7	8	9	10	OTH	TOT
1	2	1							1		1	5(16)
2		3					2	1		1		7(21)
3		1		3								4(13)
4	1		1								2	4(13)
5		3		1								4(13)
6							1		1			2(6)
7											1	1(3)
8								1				1(3)
9			1									1(3)
10*												-
OTH								2			1	3(9)
TOT	3	8	2	4	-	-	3	4	2	1	5	32
	(9)	(25)	(6)	(13)			(9)	(13)	(6)	(3)	(16)	(100)

* Added to the original classification, since the area Avonhead was a significant high status area in 1951-64.

Table 4.15 represents a summary comparison of movement between the central and outer areas in the general northwest area, between the time periods. The decade of 1920-30 showed the highest percentage movement, 22% compared with 12% for the 1930-40 period and 16% during 1951-64; even though St Albans and Merivale were added to the 'central area'. Table 4.15 also indicates the reverse trend, with the highest being in the 1951-64 period.

Each time period, consists of outward movement, lateral movement, home area reorganisation and inward movement, to either a less or greater degree. Therefore it can be concluded that the filtering process is only partially functioning, the effects least experienced during 1930-40, and of approximately equal importance in effect for both the 1920-30 and 1951-64 periods.

4.4 ALTERNATE HYPOTHESIS

(a) The Role of New Arrivals and Departures in Social Area Change: 1920-40.

If the role of migration as the primary force in social area change has been questioned, an alternative explanation must be sought. The alternative source of change stems from the new arrivals and departures of the professionals. An area's position as a high status neighbourhood is increased by the arrival of new professionals from outside Christchurch,

TABLE 4.15 MIGRATION: ORIGIN - DESTINATION: 1920-64

	DESTINATION: NORTHWEST					
	Area (2, 3, 4, 5, 6, 9)				Area (2, 5, 6, 9, 10)	
	1920-1930		1930-1940		1951-1964	
	Nos.	%	Nos.	%	Nos.	%
	Area(1)				Area(1,3,4)	
ORIGIN: CENTRAL	11	22	3	12	5	16

	DESTINATION: CENTRAL					
	Area (1)				Area (1, 3, 4)	
					1951-1964	
	Nos.	%	Nos.	%	Nos.	%
	Area(2,3, 4,5,6,9)				Area(2,5,6,9,10)	
ORIGIN: NORTHWEST	2	4	———		3	9

AREAS: City Central - 1, Fendalton - 2, Merivale - 3, St Albans - 4, Papanui - 5, Riccarton - 6, Ilam - 9, Avonhead - 10

or from individuals entering into the professions; alternatively the same areas relative position may increase due to the loss of professionals from other areas, some leaving the profession, and others dying. Similarly, the departure of professionals from a particular area lowers the concentration of elite and thus the areas social standing. These trends in combination with migrational patterns, are responsible for social area change.

To test which trend or combination of trends is responsible for Christchurch's high status area change, the dominant spatial changes identified during the 1920-30 and 1930-40 time periods were investigated more closely. Colonisation of new grid squares dominated during the 1920-30's (Fig. 4.11A) and during the 1930-40's, the most prominent change being the number of areas which lost all professionals (Fig. 4.11B). It was important to identify, for each grid, the proportions of additions or losses which were due to new arrivals and/or migration during the 1920-30 time period, and due to departures and migration in the second period(1).

Figure 4.12 gives an impression of the spatial spread of new arrivals, movers and departures, however, the tabulation method shows a clearer indication, with Table 4.16 referring to the first decade. The most significant result of this

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(1) Because the 1930 data set was used, there were no new arrivals in 1940, only departures.

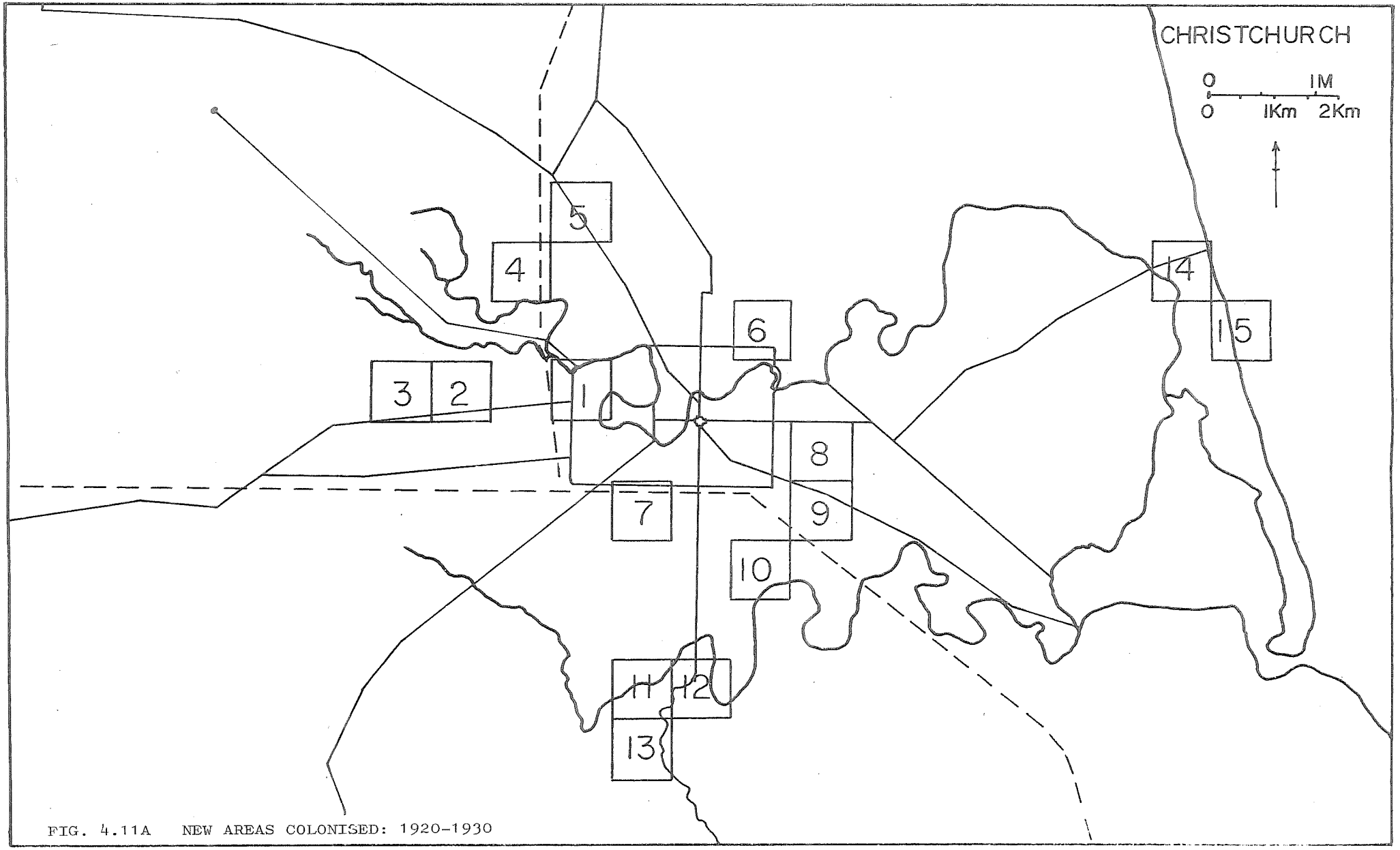

FIG. 4.11A NEW AREAS COLONISED: 1920-1930

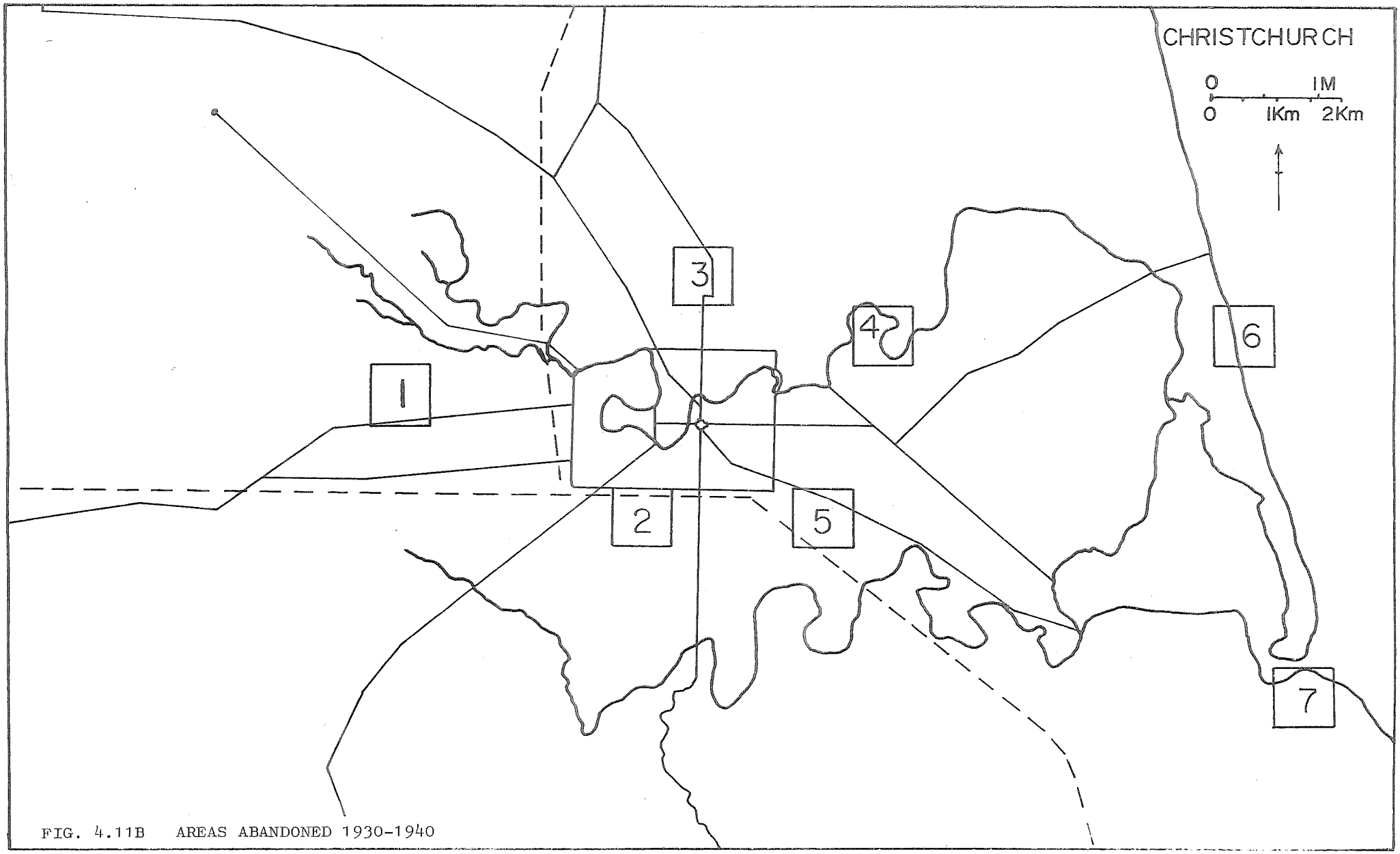

FIG. 4.11B AREAS ABANDONED 1930-1940

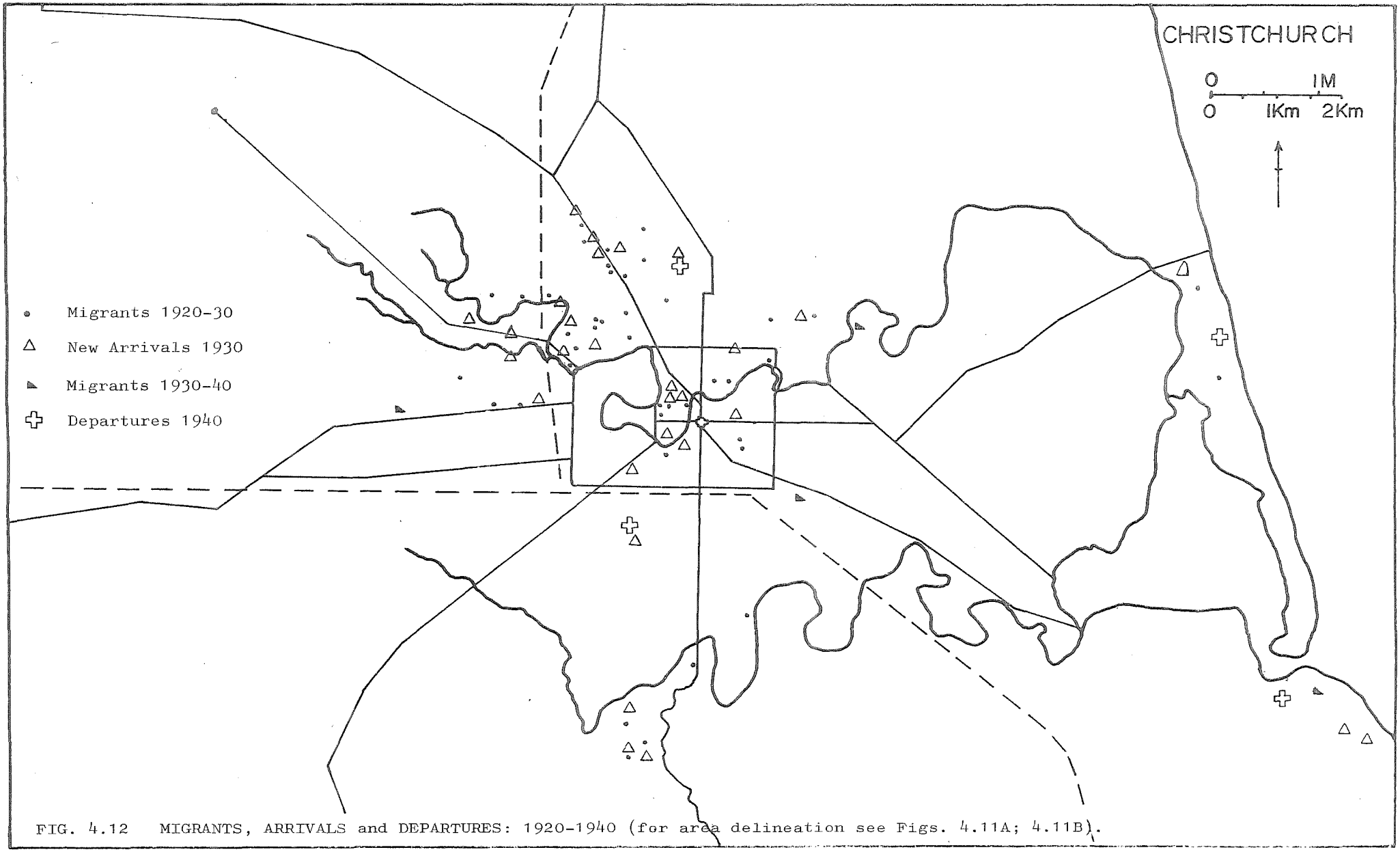

FIG. 4.12 MIGRANTS, ARRIVALS and DEPARTURES: 1920-1940 (for area delineation see Figs. 4.11A; 4.11B).

TABLE 4.16 MIGRANTS AND NEW ARRIVALS TO NEW GRID SQUARES: 1920-30

1920-30

Areas	Nos.	Migrants %	New Arrivals %	Omission(1)
1	3	2	1	-
2	4	1	2	1
3	1	1		-
4	3	-	3	-
5	9	6	3	-
6	3	-	3	-
7	1	-	1	-
8	1	1		-
9	1	1		-
10	1	1		-
11	4	4		-
12	2	1	1	-
13	7	2	5	-
14	4	1	2	1
15	1	-	-	1
TOT	45(100)	21(47)	21(47)	3(6)

(1) Figure 4.10A.

(2) Sometimes it was impossible to establish whether a professional living in Christchurch in 1930, had been previously living in Christchurch but for whom no address could be found; or whether the professional had arrived from elsewhere or newly entered the profession between 1920-30.

analysis was the disclosure of the fact that for the 15 grid squares as a group, the number of new arrivals and migrants are identical, with each group accounting for 47% of the change. Variation is seen within the individual areas however. In the northwest quadrant, (first of the 5 areas, Fig. 4.11A); for example, 3 squares have been formed largely as a result of new arrivals - (100% in the case of area 3; a portion of Fendalton). A further 2 squares have been due mainly to migration, especially area 5 (Papanui), where 6 of the 9 new professionals were migrants from elsewhere in Christchurch. A number of central areas were formed completely from migration, but most areas showed combination of both new arrivals and migration.

Table 4.17, illustrates the proportion of migrants and departures during the second time period, follows closely the basic trends of the previous period, migrants and departures each accounted for half the variation. The numbers are considerably less than those of the first period, consequently all areas except area 7, lost only one professional.

The fundamental conclusion drawn from this analysis, was the equal responsibility of migration and arrivals-departures, in accounting for high status area change in areas of new formation and elimination.

TABLE 4.17 MIGRANTS AND DEPARTURES FROM ABANDONED GRID SQUARES 1930-40.

Areas(1)	Nos.	Migrants	Departures
1	1	-	1
2	1	1	
3	1	1	
4	1	-	1
5	1	-	1
6	1	1	
7	2	1	1
TOT	8(100)	4(50)	4(50)

(1) Figure 4.1/B.

(b) Family Status and High Status Area Change: 1920-1940

Due to the weakness in the provided explanation on status area change, a need for modification to the filtering process is suggested. Johnston (1969) propounded an explanation based on the amalgamation of the principles of the filtering process with the model relating residential location to stages in the family cycle as outlined by Abu-Lughood and Foley (1960). In general, suburban locations are only attractive to those who have selected familism as their dominant life style(1). Home ownership is an important aspiration of most young families, and membership of the elite leads to selection in the more fashionable suburbs, with the locational choice depending on the layout of existing high status suburbs. When the possibility exists of obtaining suitable building land, either through the use of vacant land, or the subdivision of existing properties in the fashionable areas, preference for such land would be expected, rather than for that which is available in peripheral areas.

Johnston (1969) therefore concluded that the slow outward progression of high status areas was largely due to the fact that young families moving into the elite were able to build new homes as readily in the core area as in the outer

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(1) For an explanation on familism as a life style, and its relation to residential location, see W. Bell, "Social choice, life styles and suburban residences" in W.M. Dobriner (ed) 1958; 'The Suburban Community' (New York) pp. 225-47.

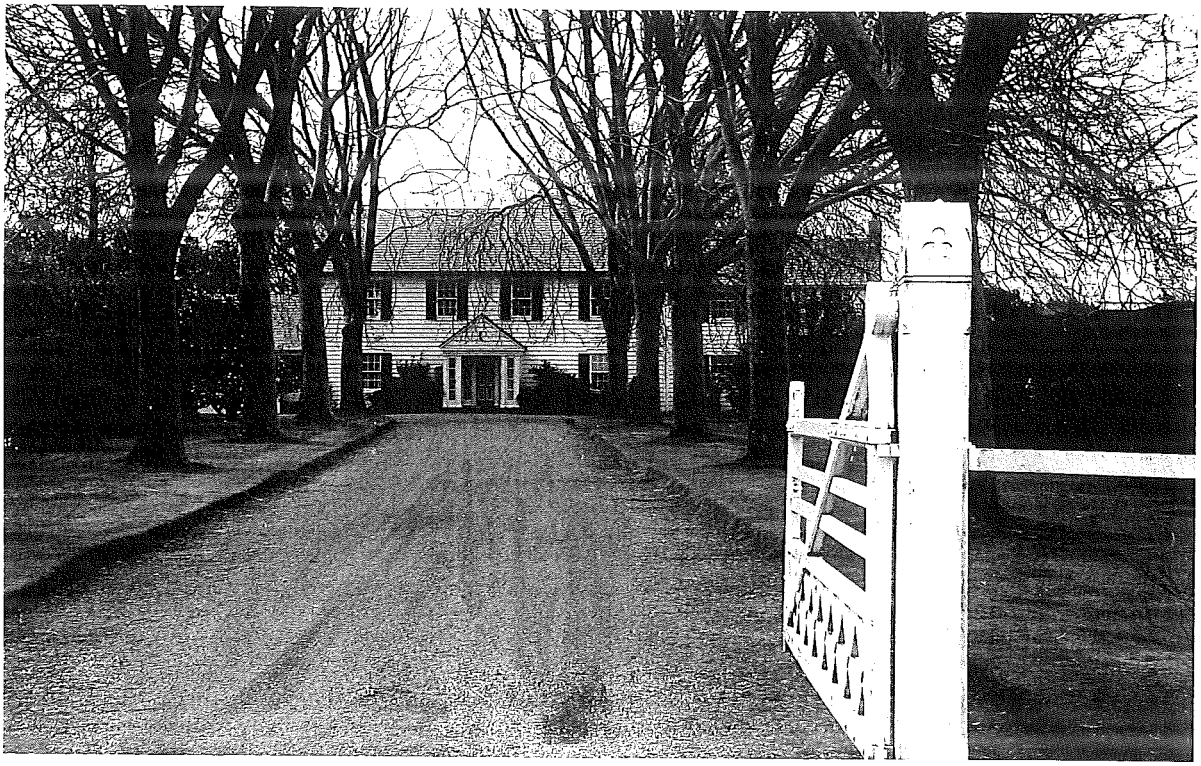

PLATE 16: An example of extensive gardens of many Fendalton properties - Glandovey Road.

PLATE 17: An example of land cleared of homes in Fendalton to make way for luxury town houses - Glandovey Rd.

zone of assimilation.

> "Within the northwestern quadrant of Christchurch it is possible to increase housing densities through subdivision of gardens so lavishly provided in the original development" (Johnston 1969, 10) (Plates 16 and 17).

He noted that this subdivision proceeds outwards through the prestigious areas, and as this subdivision proceeds outwards, and the older elite either die or leave the inner suburbs, the centre of gravity also moves slowly outward. The older suburbs become less attractive to other elite and those of lesser means move in. Therefore, the principles of the filtering process are operating, as propounded by Lowry (1960) but without the resulting spatial pattern anticipated by Hoyt (1969); "the filtering which takes place is the result and not the process....." (Johnston 1969, 10).

To test this notion in the 1920-40 period it was necessary to establish the age structure of the various high status areas. The migrants and non-migrants[1] are grouped into 5 age classifications (Tables 4.18, 4.19; and Figure 4.13). The first stage of analysis involved an investigation of the relationship between age and high status area change. The

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(1) The migrants for any year are those who have moved within a decade, either way of that year, similarly non-movers are those who have not moved within a decade of the year, except 1940, when the criterion is movement or non-movement for 1930-40.

TABLE 4.18 AGE DISTRIBUTION OF PROFESSIONALS - NORTHWEST: 1920-1940

1920

AREA[1]		0 - 33			34 - 43			44 - 53			54 - 63			64+				
		M	NM	T[2]	M	NM	T	M	NM	T	M	NM	T	M	NM	T	Nos.	%
1	%				24	6		34	12		12			12				100
	Nos.				4	1	5	6	2	8	2		2	2		2	17	19
2	%	8	8		25	25		14	8					8				100
	Nos.	1	1	2	3	3	6	2	1	3				1		1	12	14
3	%	6	6		38			25	19						6			100
	Nos.	1	1	2	6		6	4	3	7					1	1	16	18
4	%				20	20		40			20							100
	Nos.				1	1	2	2		2	1		1				5	6
5	%				50						50							100
	Nos.				1		1				1		1				2	2
Remainder of City		6	6		43	6		8	6		17			2	6			100
		2	2	4	16	2	18	3	2	5	6		6	1	2	3	36	41
TOTAL				9			43			28			11			9		100
		4	4	8	31	7	38	17	8	25	10		10	4	3	7	88	100

1930

1	%		11			16		16	16		11	26			4			100
	Nos.		2	2		3	3	3	3	6	2	5	7		1	1	18	12
2	%					9		33	33			25						100
	Nos.					1	1	4	4	8		3	3				12	8
3	%		9		9	9		25	6		12	14		12	9			100
	Nos.		3	3	3	3	6	7	2	9	4	5	9	4	3	7	34	22
4	%	11	26		4	4		13	26		4	8		4				100
	Nos.	3	7	10	1	1	2	4	7	11	1	2	3	1		1	27	17
5	%	33						17	17					33				100
	Nos.	2		2				1	1	2				2		2	6	4
Remainder of City		4	9		9	12		19	19		7	7		7	7			100
		2	5	7	5	7	12	11	11	22	4	4	8	4	4	8	57	37
TOTAL				15			15			37			19			14		100
		7	17	25	9	15	24	30	28	58	11	19	30	11	8	19	155	100

1940

1	%		14						7	7			28			44				100
	Nos.		2	2					1	1	2		4	4		6	6	14	12
2	%								22				78							100
	Nos.								2		2		7	7				9	8
3	%	6			12	3			10	20			23			3	23			100
	Nos.	2		2	4	1	5		3	6	9		7	7		1	7	8	31	27
4	%	15	4		4	26			10	4			22				15			100
	Nos.	4	1	5	1	7	8		3	1	4		6	6			4	4	27	23
5	%												100							100
	Nos.												4	4				4		3
Remainder of City		3			3	6			6	20		3	38				21			100
		1		1	1	2	3		2	6	8	1	11	12			6	6	30	27
TOTAL				9			14				21			35				21		100
		7	3	10	6	10	16		11	14	25	1	39	40		1	23	24	115	100

(1) Zones in the northwest (see Fig. 4.2)

(2) M = mover (moving either way of Central date)
NM = non-mover
T = Total distribution

TABLE 4.19 AGE DISTRIBUTION OF PROFESSIONALS - ENTIRE CITY: 1920-1940

1920 AREA(1)		0 - 33 M	0 - 33 NM	0 - 33 T(2)	34 - 43 M	34 - 43 NM	34 - 43 T	44 - 53 M	44 - 53 NM	44 - 53 T	54 - 63 M	54 - 63 NM	54 - 63 T	64+ M	64+ NM	64+ T	Nos.	%
1	%	5	8		29	8		24	8		13			5				100
	Nos.	2	3	5	11	3	14	9	3	12	5		5	2		2	38	42
2	%				33			33			22							100
	Nos.				3		3	3		3	2		2		1	1	9	10
3	%				33			33	33									100
	Nos.				1		1	1	1	2							3	3
4	%				46	18		9	18									100
	Nos.				5	2	7	1	2	3				1		1	11	12
5	%	14	14		44	14		14										100
	Nos.	1	1	2	3	1	4	1		1							7	8
6	%							50	50									100
	Nos.							1	1	2							2	2
7																		
8	%				33	33		33										100
	Nos.				1	1	1	1		1							3	3
9																		
Remainder of City		6			42	6		6	6		11	6		6	11			100
		1		1	8	1	9	1	1	2	2	1	3	1	2	3	18	20
TOTAL				9			44			27			12			8		100
		4	4	8	32	8	40	17	8	25	10	1	11	4	3	7	91	100
1930																		
1	%		9			16		16	21		7	23		2	6			100
	Nos.		4	4		7	7	7	9	16	3	10	13	1	2	3	43	26
2	%	7	10		7	3		32	17		10	3		8	3			100
	Nos.	2	3	5	2	1	3	9	5	14	3	1	4	2	1	3	29	17
3	%		8		15			23	23			23			8			100
	Nos.		1	1	2		2	3	3	6		3	3		1	1	13	8
4	%		22		7			14	29			14		14				100
	Nos.		3	3	1		1	2	4	6		2	2	2		2	14	8
5	%	10	20			25		15	15		5	10						100
	Nos.	2	4	6		5	5	3	3	6	1	2	3				20	12
6	%		32		17						17	17		17				100
	Nos.		2	2	1		1				1	1	2	1		1	6	4
7	%				7			22	14		14	7		14	22			100
	Nos				1		1	3	2	5	2	1	3	2	3	5	14	8
8	%	25			25			25	25									100
	Nos.	1		1	1		1	1	1	2							4	2
9	%	33												66				100
	Nos.	1		1										2		2	3	2
Remainder of City		9	9		9	9		27	5		5	5		9	13			100
		2	2	4	2	2	4	6	1	7	1	1	2	2	3	5	22	13
TOTAL				16			15			36			19			14		100
		8	19	27	10	15	25	34	28	62	11	21	32	12	10	22	168	100

1940

1	%					12			8	12			28		20	20				100
	Nos.					3	3		2	3	5		7	7	5	5	10		25	23
2	%	12				29			12	6			29			12				100
	Nos.	2		2		5	5		2	1	3		5	5		2	2		17	16
3	%				12				12	5		12	41			18				
	Nos.				2		2		2	1	3	2	7	9		3	3		17	16
4	%												86			14				
	Nos.												6	6		1	1		7	6
5	%	13			4	13			13	21			21			15				
	Nos.	3		3	1	3	4		3	5	8		5	5		4	4		24	22
6	%				33	33										33				
	Nos.				1	1	2									1	1		3	3
7	%								20	20		20	20			20				
	Nos.								1	1	2	1	1	2		1	1		5	4
8	%	100																		
	Nos.	1		1															1	1
9	%																			
	Nos.																			
Remainder of City					10	10				10			60			10				
					1	1	2			1	1		6	6		1	1		10	9
TOTAL																				100
		6		6	5	13	18		10	12	22	3	37	40	5	18	23		109	100

(1) High Status Areas (See Fig. 4.

(2) M = Moved (moving either way of the central date)
NM = Non-Movers
T = Total distribution

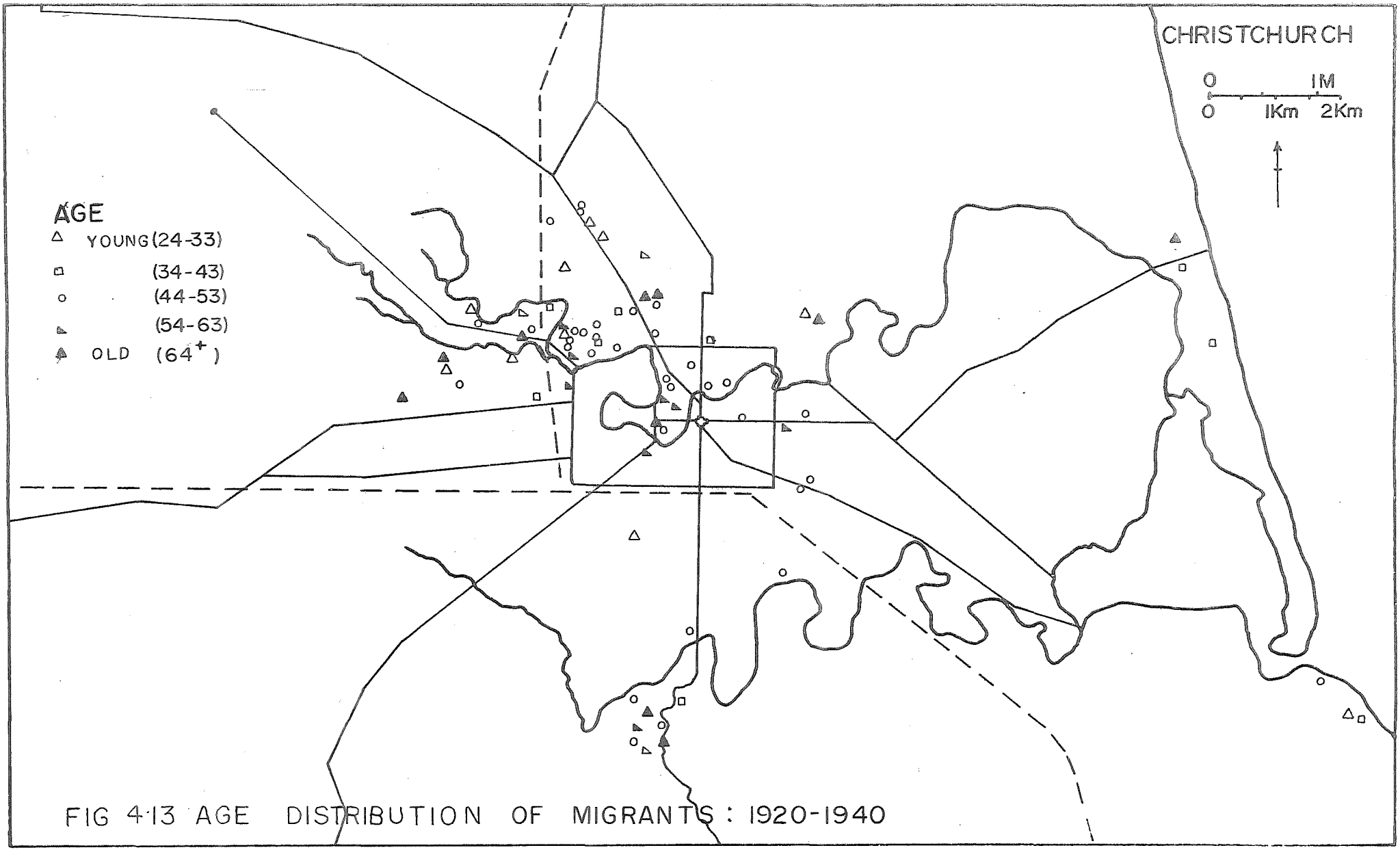

FIG 4·13 AGE DISTRIBUTION OF MIGRANTS : 1920-1940

filtering hypothesis as applied to sector status change implied a more youthful population in the growth zones than the zones of discard. Study of Table 4.20, indicates that there is no consistent increase in the general age structure with increasing distance from the city centre. Earlier analysis however, illustrated that the patterns of status growth and decline do not follow the simple sector theory.

A more meaningful relationship may be established between the different age structures and the actual growth and decline of professional distribution patterns. Table 4.21 provides a summary of the distribution changes. During the 1920-30's, zones 1 and 2 experienced a significant decline in relative status, with Table 4.20 indicating that these same areas consisted of a relatively older age structure. The next 3 zones indicated relative growth, especially zone 4 during the decade 1920-30, although, comparison with Table 4.20 shows that only zone 4 consisted of a youthful age structure and that the magnitude of the Z score indicated a very significant lower relative age group. Zone 5's age structure was close to unity, but zone 3 indicated the oldest age structure of the 5 zones in the northwest. This third zone, is the only zone which is significantly inconsistent with the notion that the growth areas will have a younger age structure than that of the decline areas.

During the second period, 1930-40, Table 4.21 indicates that zones 1 and 2 retained their relative status positions,

TABLE 4.20 INDICES AND Z-SCORES FOR AGE STRUCTURE OF ZONES IN THE NORTHWEST

Zones (NW)	1920 Index[1]	1920 Z Score[2]	1930 Index	1930 Z Score	1940 Index	1940 Z Score
1	3.0	+1.08	3.1	+0.57	4.6	+1.5
2	2.3	-0.81	3.2	+0.86	3.8	0.0
3	2.5	-0.27	3.3	+1.4	3.5	-0.57
4	2.8	+0.54	2.4	-1.43	3.0	-1.51
5	3.0	+1.08	3.0	+0.29	4.0	+0.38
OTH	2.1	-0.83	2.6	-0.86	3.6	-0.38
TOT $\bar{x}$	2.6		2.9		3.9	
σ	0.37		0.35		0.53	

(1) Index computation is as follows; the age of each individual was grouped into five age groups (1 the youngest, under 33 and 5 the oldest, over 64). The number in each group was multiplied by the group classification number, these were added and divided by the total number of individuals in the particular zone. Thus the index reflects the age structure of the zone, a low index indicates youthfulness, while a high index shows an older structure.

(2) Z-scores have been computed in the usual manner;

$$Z = \frac{x - \bar{x}}{\sigma}$$

TABLE 4.21 DISTRIBUTION OF PROFESSIONALS BY ZONES IN THE NORTHWEST

Zones	% 1920	% 1930	% 1940	% 1920 -30	% 1930 -40
1	19	12	12	- 7	-
2	14	8	8	- 6	-
3	18	22	27	+ 4	+ 5
4	6	17	23	+11	+ 6
5	2	4	3	+ 2	- 1
OTH	41	37	27	- 4	-10
TOT	100	100	100	±17	±11

although Table 4.20 shows that zone 1 has the oldest age structure and zone 2 that of average. Moderate status increase was evident in zones 3 and 4, with zone 4 being again dominant; similarly the age structure was relatively young, again, especially in zone 4. Zone 5 experienced a slight decline in status and consisted of a youthful age structure. Both the second period of 1930-40 and the first of 1920-30, has conformed to the general trends of age structure and changing status, as expressed by Johnston (1969).

Similarly, an examination will be undertaken of the relationship between age structure and high status area change of the entire city. Table 4.23 illustrates that during the period of 1920-30, only the three areas of City Central, St Albans and the 'others', have lost their relative status position; correspondingly the age structure for these areas in 1930 is that of:- slight age, unity and slight age respectively, as shown in Table 4.22.

Those areas having the oldest age structure were Cashmere and Avonhead, each recording gains in relative status during 1920-30 as shown in Table 4.23, but with Cashmere recording the highest gain. Papanui, Riccarton and the Hills were the youngest areas, with the first two experiencing moderate increases in their status ranking, and the Hills retaining its relative position.

TABLE 4.22 MEASURES OF AGE STRUCTURE FOR HIGH STATUS AREAS

	1920		1930		1940	
Areas	Index	Z Score	Index	Z Score	Index	Z Score
1	2.5	-0.26	3.0	+0.17	4.0	+0.82
2	3.1	+1.28	2.9	0.0	3.0	-0.21
3	2.7	+0.26	3.1	+0.33	3.8	+0.62
4	2.5	-0.26	2.9	0.0	4.1	+0.93
5	1.9	-1.79	2.3	-1.0	2.1	-0.1
6	3.0	+1.03	2.8	-0.17	3.0	-1.21
7	-	-	3.9	+1.67	3.8	+0.62
8	2.7	+0.26	1.8	-1.83	1.1	-2.16
9	-	-	3.7	+1.33	-	-
OTH	2.9	+0.54	3.0	+0.17	3.6	+0.33
TOT	2.6		2.9		3.2	
S.D.	0.39		0.6		0.97	

$\bar{x}$ 2.6 'other' omitted
S.D. 0.39

$\bar{x}$ and S.D. Some with or without 'other'

$\bar{x}$ 3.2 'other' omitted
S.D. 0.97

TABLE 4.23 DISTRIBUTION OF PROFESSIONALS BY HIGH STATUS AREA

Areas	% 1920	% 1930	% 1940	1920 - 30	1930 - 40
1	42	26.	23	- 16	- 3
2	10	17	16	+ 7	- 1
3	3	7	16	+ 4	+ 9
4	12	8	6	- 4	- 2
5	8	12	22	+ 4	+ 10
6	2	4	3	+ 2	- 1
7	-	8	4	+ 8	- 4
8	3	3	1	0	- 2
9	-	2	-	+ 2	- 2
OTH	20	13	9	- 7	- 4
TOT	100	100	100	± 27	± 19

As indicated in Table 4.23, during the second period of 1930-40, Merivale and Papanui were the only areas to increase their relative status position, with the same areas in 1940 showing a difference within their age structure (Table 4.22); Merivale relatively old, and Papanui moderately young. The remaining areas experienced moderate losses in their status rating (Table 4.23), although their age structures showed marked variations; City Central, St Albans, Cashmere and the Other were older than the average, whereas Fendalton, Riccarton and the Hills younger than the average (Table 4.22).

A study of Table 4.24 indicates from the age grouping aspect, the group which was dominant in the migration pattern of the 1920-30 period; was that of the 44-53 age group(1), which may explain some of the apparent anomalies observed earlier. One possible explanation may be that an area that experienced growth in status and an increase in the older age group, is due to the high percentage of migrants who are over 44 years of age. Similarly, an area that is experiencing a change which is largely due to an increase of the new arrivals of profession status, will consist of a younger age structure.

The level of migration decreased during the second period of 1930-40, whereas the percentage of departures

(1) Due to the nature of the dats, a large number of either migrants or non-migrants falling into the less than 33 age group were not included, as a person that was 33 in 1930 would only be 23 in 1920, and therefore unlikely to be a member of the professional group.

TABLE 4.24 MOVERS, STAYERS AND NEW ARRIVALS BY AGE

	1920-30						1930-40					
	-33	-43	-53	-63	64+	TOT	-33	-43	-53	-63	64+	TOT
STAYER	1	2	9	10	3	25	8	8	22	11	3	52
MOVER	1	1	18	5	7	32	4	4	8	1	1	18
NEW ARRIVAL	17	10	9	6	1	43	DEPARTURES					
							4	4	5	9	8	30
TOTAL	19	13	36	21	11	100	16	16	35	21	12	100

increased, therefore having a more significant effect on status change. Again the older age groups dominated, especially that of the 44-53 age group.

4.5 HIGH STATUS AREA PERMANENCE

(a) Residential Densities

Johnston (1969), suggested that one of the reasons for the slow outward movement of high status areas, may be due to the layout of existing fashionable suburbs allowing extensive subdivision, which appears to proceed outwards through the core area to the zone of assimilation. Little evidence however, was brought forward in support of this argument, in addition, there was no clear distinction drawn between subdivision for single unit private homes and multi-unit flat development. The building of luxury ownership flats or town houses in presently fashionable suburbs allows for a greatly increased residential density and offers new arrivals and those leaving the zones of discard an option between the high status core area and the high status peripheral area location.

Residential densities have steadily increased in most suburban areas, however the nature of change often varies. In some suburbs increased density is associated with declining status, similarly however, many high status areas have increased their density without the concomitant status decline;

indeed this process may help to explain the consolidation and permanence of the fashionable areas.

(i) Flat Development. In the past two decades, the growing popularity of flats in Christchurch, both ownership and rental, has played a major role in population density increases. Table 4.25 illustrates the growing importance of flats, for example, during the past 15 years flat numbers have almost doubled, from 5357 to 9575 or from 11.1% to 13.5%, with the rate of increase being greater than the general residential growth rate. A breakdown of dwelling unit numbers of Table 4.26 show that those of three or more are aprroximately as numerous as double units. The changing trends in housing preferences were reflected in the relative numbers of new additions each year, within the different building types (Table 4.27). During 1957, the number of flats built was negligible: a ratio to houses of approximately 40:1, with only 37 units being built; whereas during 1970, the number of flats built, 611 units, was approximately half that of new homes built, but the number of houses converted to flats only moderately increased.

Compilation of figures by the Christchurch Town Planning Division (1971), indicate a marked spatial variation in the building of new flats (Table 4.28). In the context of the Town Planning study, it is obvious that the highest status area, of Merivale/St Albans, dominates flat building, accounting for 52% of all new flats for the five areas considered

TABLE 4.25 NATURE OF INHABITED DWELLINGS: 1951-66 Source: Census

Year	Total Private Dwellings	% of Grand Total	Total Flats	% of Grand Total	Other	Grand Total
1951	41,888	87	5,357	11.1	910	48,155
1956	47,779	86.3	6,843	12.4	716	55,358
1961	55,081	87.2	7,405	11.7	714	63,200
1966	60,959	85.7	9,575	13.5	624	71,156

TABLE 4.26 RESIDENTIAL LAND USE: 1956-66 Source: Regional Planning Authority

	1956		1966		
Type of Dwelling	Nos.	%	Nos.	%	% Change
Single Unit	49,223	90.6	59,045	84.0	-6.6
Units of Two	2,438	4.5	5,806	8.3	+3.8
Blocks of Three or more	2,675	4.9	5,448	7.7	+2.8
TOTAL	54,336	100%	70,299	100%	±6.6

TABLE 4.27 RESIDENTIAL BUILDING TYPES: 1957-67 (Building permits)

Year	Houses	Flats	Conversions	Other	Total
1957	1531	37	86	241	1895
1960	2157	136	138	148	2579
1965	1556	588	191	65	2400
1970	1301	611	120	85	2117

TABLE 4.28 NEW FLATS - SELECTED AREAS: 1956-68 (Building Permits)

Area	1956-61 %	1962-66 %	1967-8 %	Total 1956-68 %
Within Four Belts	24	19	12	18
St Albans/Merivale	31	48	52	46
Richmond/Linwood	37	24	25	27
Waltham	3	2	2	2
Sydenham	5	7	9	7
TOT %	100	100	100	100
TOT Units	331	1233	347	1911

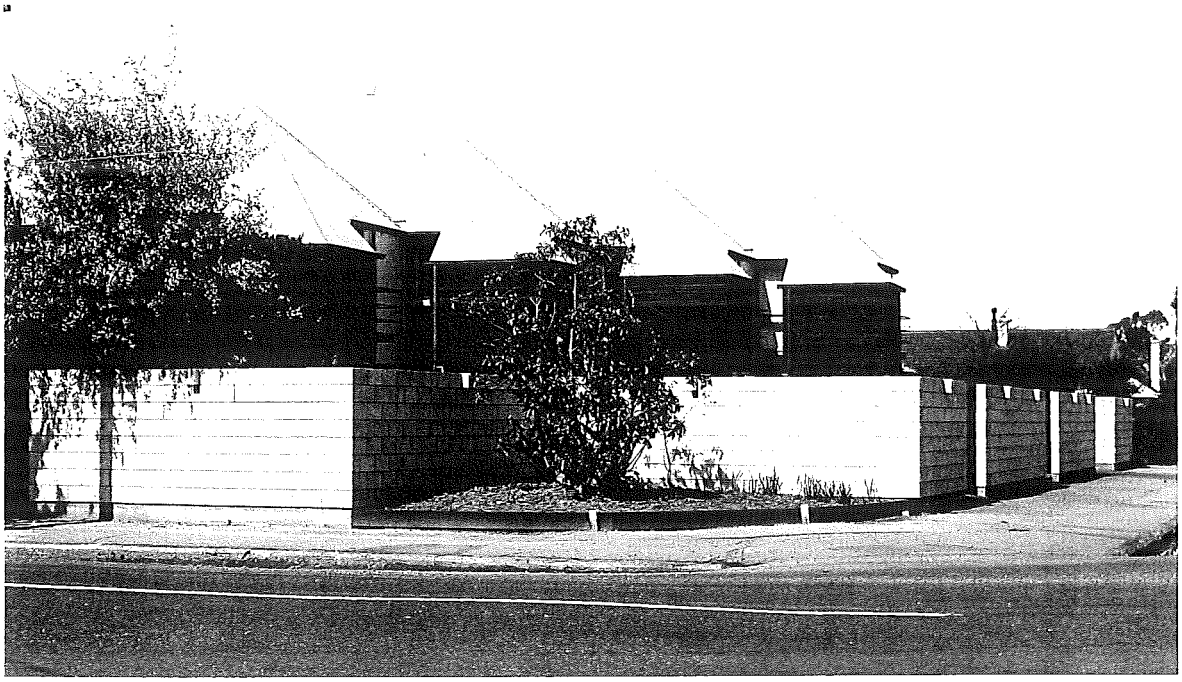

PLATE 18: Recent multi-unit development in Merivale - Winchester Street.

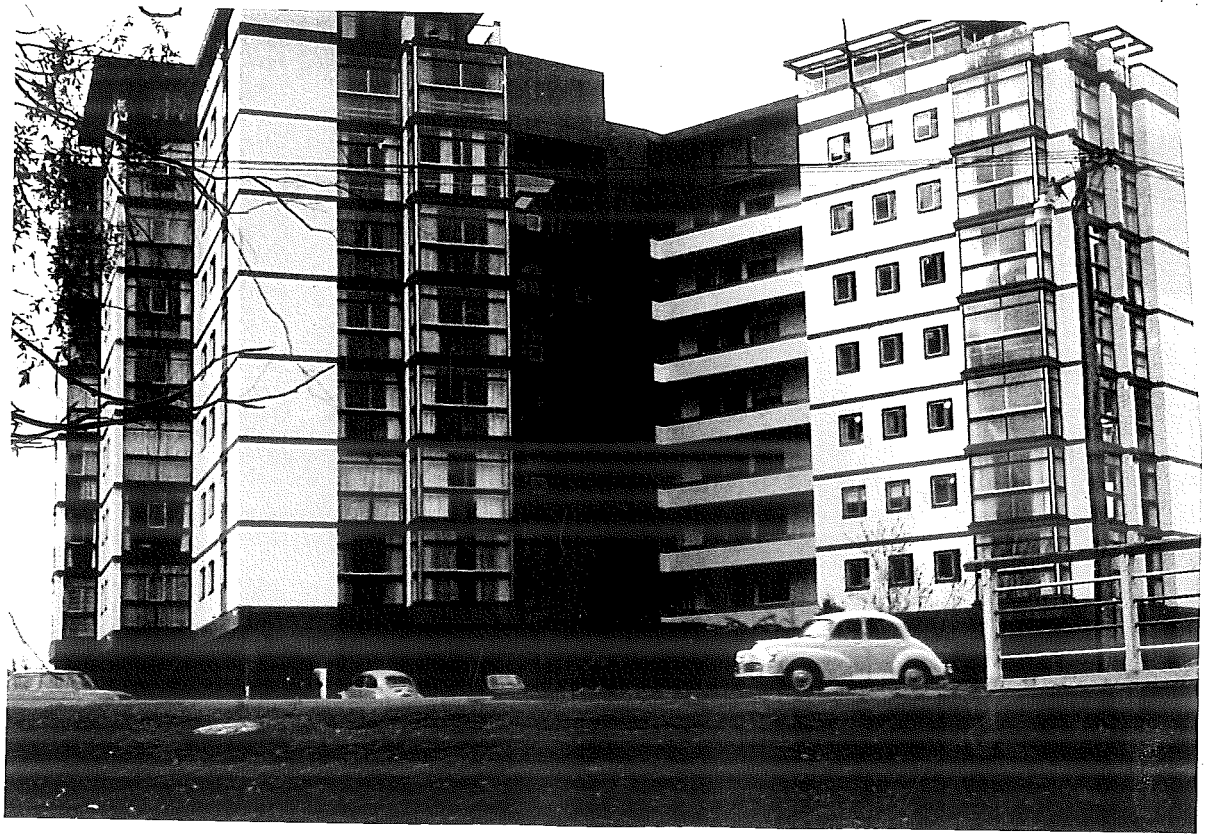

PLATE 19: One of the first luxury high rise apartment complexes; 'Millbrook' - Carlton Mill Road.

(Plate 18). As illustrated by Figure 4.14, the two areas with the lowest rates of flat development, are also the lowest socio-economic areas. Trends in house conversion are basically similar to those of new flat development, but with house conversion in the two southern suburbs being more prominent than flat development (Table 4.29, Fig. 4.15). These areas between 1956-68, in terms of flat development accounted for 9% (Table 4.28), but in terms of house conversion to flats, 22% (Table 4.29). This is of significance when studying social area change; as the high status areas, Merivale in a city wide context, but also St Albans in this situation, are able to be rejuvenated by the replacement of the older homes by new flats; in many cases luxury flats, and thus the area retains its status(1). Lesser areas, in particular those of the lowest status, experience little new flat development, with the increase in flat numbers being mainly due to that of house conversion. This development of these areas does little to increase their status; indeed in relative terms the gap between the lower and higher status areas continues to widen. Another consideration with further important implications effecting social area change is that most of the southern suburbs such as Waltham and Sydenham, the City Central area and parts of Linwood and Richmond in 1966, were residential areas over 60 years old, and some areas up to 90 years old (Fig. 4.16). In 1966, the majority of these

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(1) See later analysis, especially Figure 4.23.

TABLE 4.29 CONVERSION OF EXISTING DWELLINGS TO APARTMENTS - SELECTED AREAS

1956-68 (Building Permits)

Area	1956-61 %	1962-66 %	1967-68 %	TOT 1956-68 %
Within Four Belts	21	18	15	20
St Albans/Merivale	36	29	41	34
Richmond/Lonwood	26	22	23	24
Waltham	7	7	5	7
Sydenham	10	24	16	15
TOT %	100	100	100	100
TOT Units	592	366	137	1095

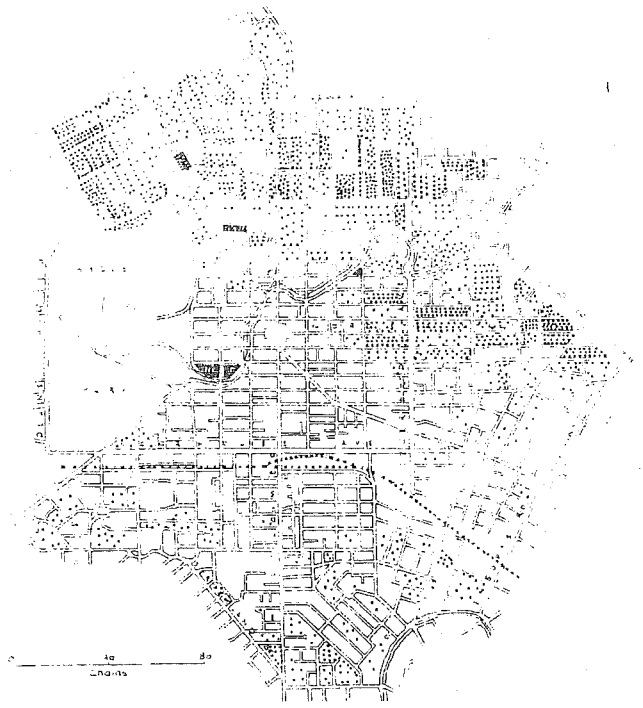

FIG 4·14 APARTMENT UNITS : PERMITS ISSUED : 1956-68
SOURCE : TOWN PLANNING

FIG 4·15 HOUSES CONVERTED: PERMITS ISSUED: 1956-68
SOURCE: TOWN PLANNING

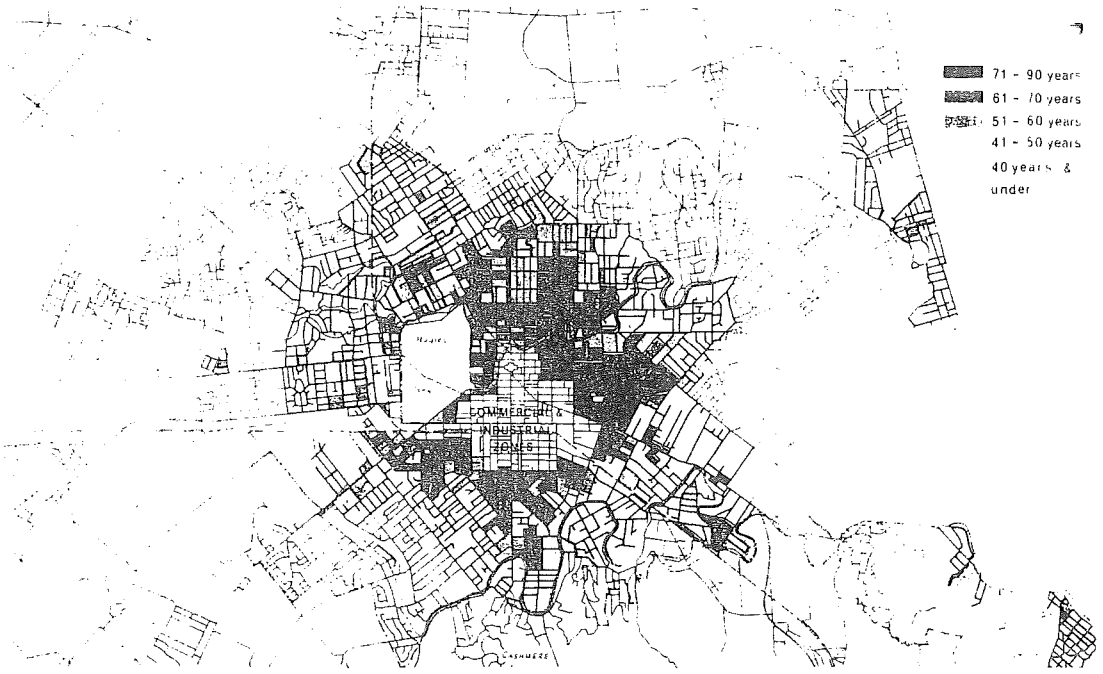

FIG 4·16 ESTIMATED AGE OF RESIDENTIAL BUILDINGS: 1966
SOURCE: TOWN PLANNING

FIG 4·17 ESTIMATED LIFE EXPECTANCY OF RESIDENTIAL BUILDINGS: 1966
SOURCE: TOWN PLANNING

houses had a life expectancy[1] of less than 15 years (Fig. 4.17); by comparison most of the residential area of Merivale and St Albans in 1966 were less than 60 years old, with a general life expectancy of over 26 years and over 50 years in some areas in Merivale (Fig. 4.17). Therefore, the oldest areas with the lowest life expectancy, are the areas dominating house conversion with little replacement by new development; by comparison the younger areas with considerable residential life expectancy, are the areas engaged in the majority of the new building developments. These seemingly contradictory trends help accentuate status differences. There is a more specific implication for Merivale[2], as the addition of new luxury apartments (and field observations confirm this) increases the residential density and offers alternative locations to high status growth areas for the elite.

(ii) Residential Infilling. On the fringes of the metropolitan area lie the extensive post-war residential sub-divisions, which have absorbed most of the population increase of recent years. The outward expansion of residential areas during the post war years can be appreciated by the comparison of Figures 4.18A-D. These maps also indicate that at each

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(1) These estimates were based on the comprehensive field survey of housing conditions conducted by the Town Planning Division of the Christchurch City Council (1971).

(2) Merivale has been separated from St Albans for the 1971 Census data based on the factorial ecology by Newton (pers. comm.) but the professional distribution study of Chapter 2 includes St Albans amongst Christchurch's high status areas.

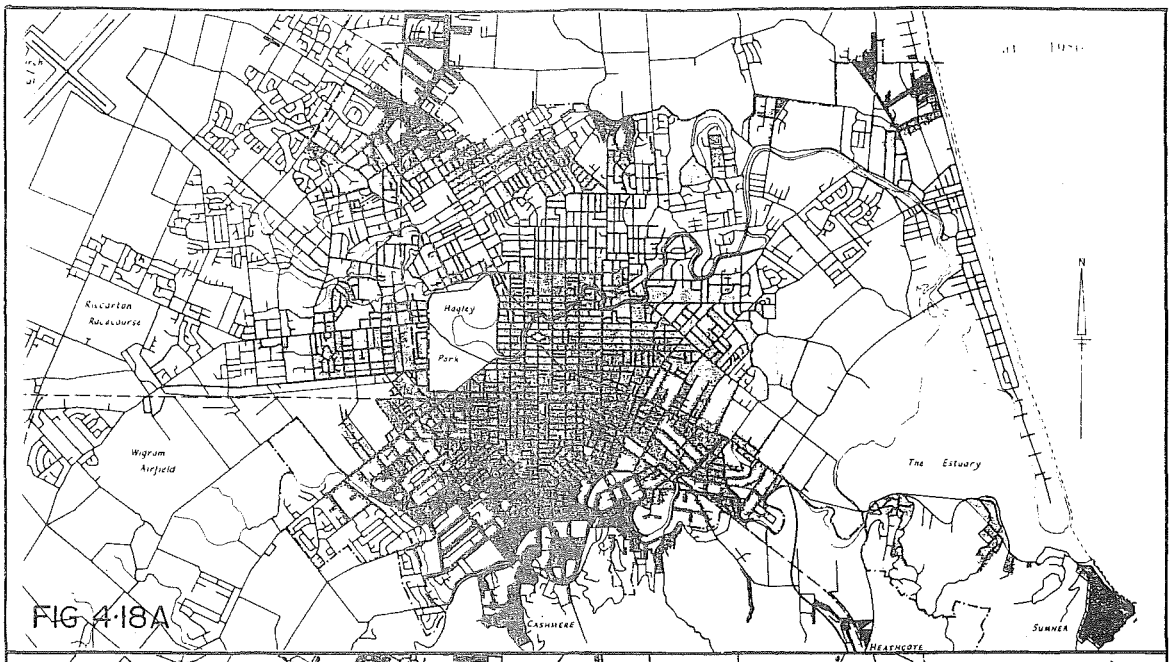

FIG 4·18A

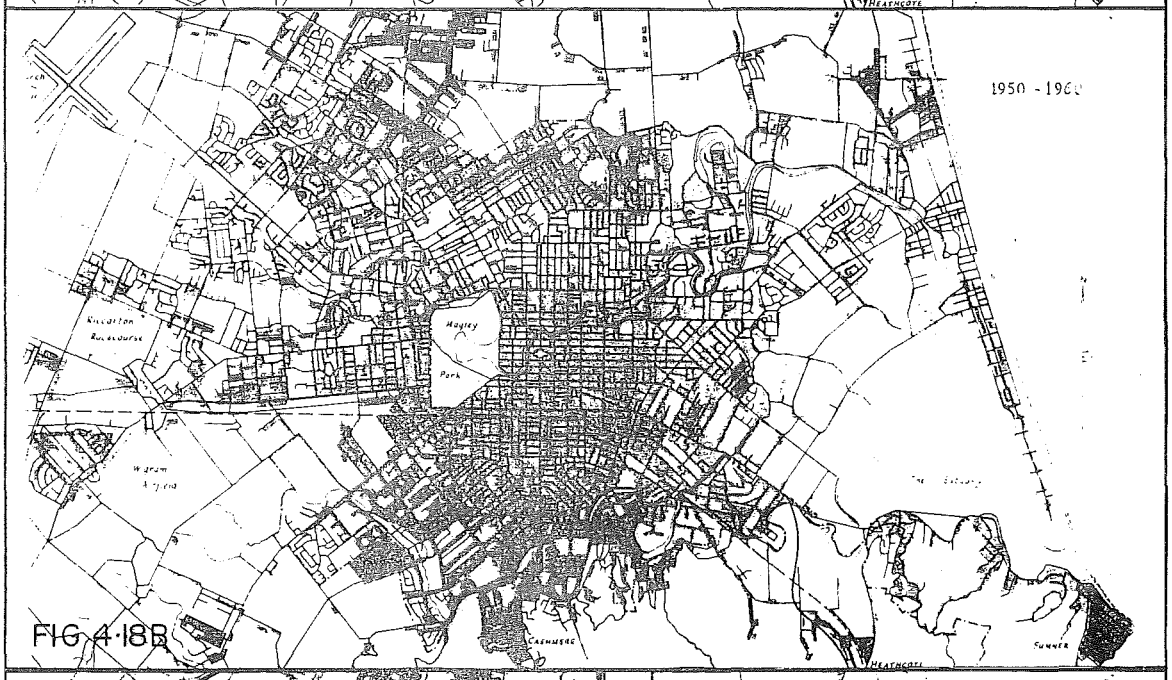

FIG 4·18B

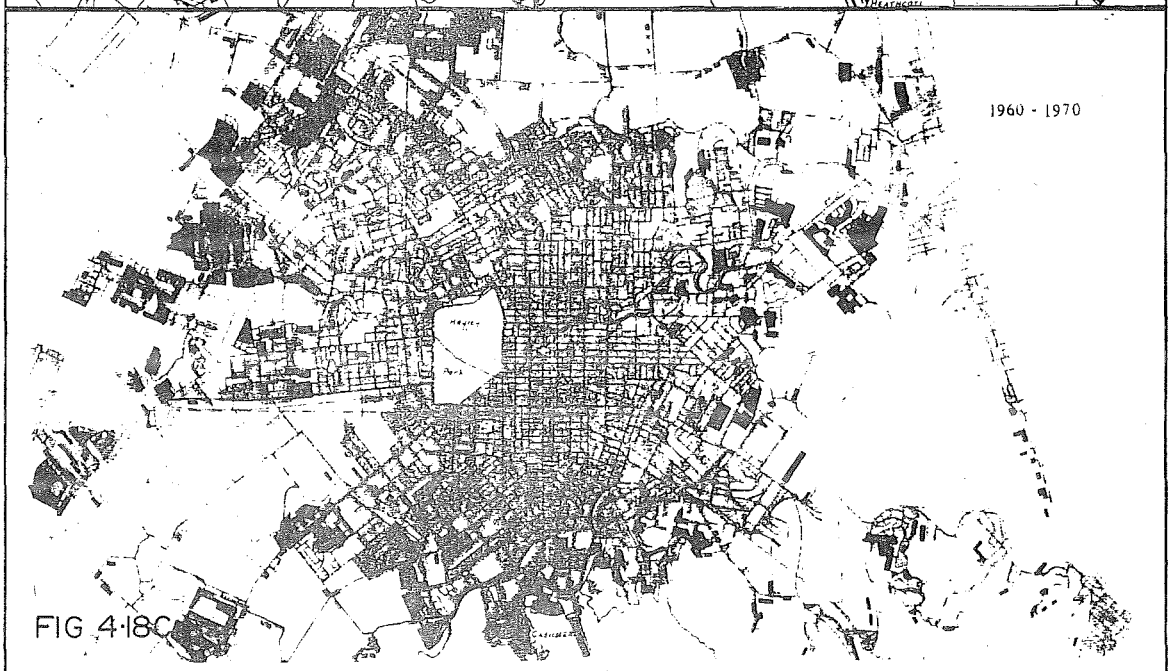

FIG 4·18C

URBAN AREA DEVELOPMENT: 1950-1970

SOURCE: TOWN PLANNING

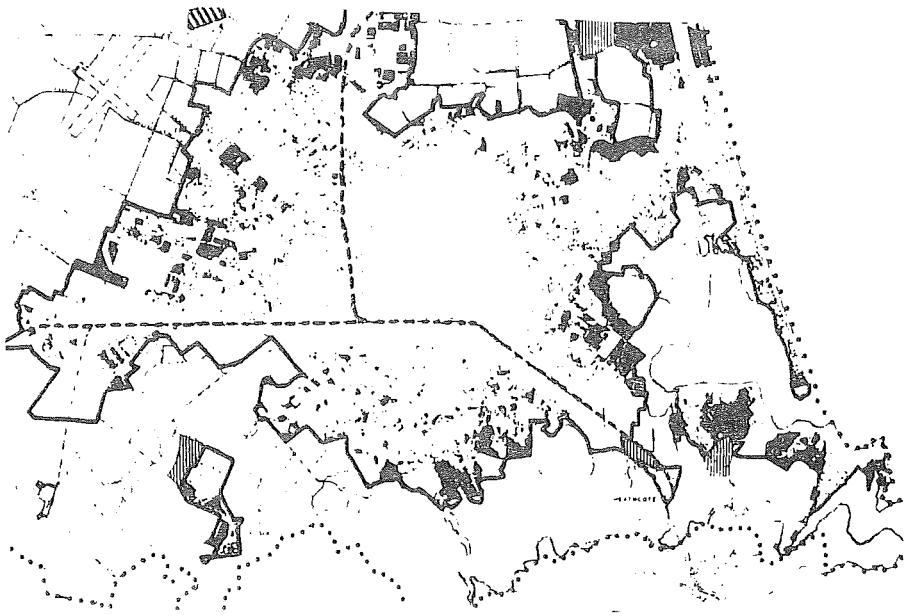

FIG. 4.18D LAND AVAILABLE FOR RESIDENTIAL PURPOSES: 1972

Source: Regional Planning Authority

period, back-land was available for infilling. The amount of vacant land in the present high status areas of the northwestern quadrant was considerable in 1950 (Fig. 4.18B). This has steadily declined, but even in 1970, as Figure 4.18C indicates, there was vacant land potentially available for housing in the inner most areas of the high status sector, in Merivale for example, and in suburbs like Ilam, Avonhead and Burnside there are large areas of unoccupied land. The extent of available land in late 1972 is indicated by Figure 4.18D. With the exception of peripheral locations, especially in the hill and coastal areas, the majority of the back-land suitable for residential building is located in the north-western quadrant of the city, due to recent growth in that direction (Refer earlier Section in Chapter 3).

A more detailed picture of the nature of residential land availability is provided by Table 4.31[1]. There is an obvious spatial distinction in the nature of residential land availability[2]. In absolute terms, there is a general trend of increased acreage of unused residential land towards the urban periphery. Central area land availability in 1971 was as low as 8.3 acres in St Albans and 1.8 acres in Merivale; by comparison land available in Yaldhurst/Avonhead is as much

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(1) The regional units referred to in Table 4.31 are delineated in Figure 4.19.

(2) The criteria of land available for residential purposes within the urban force has been established and data computed by the Regional Planning Authority.

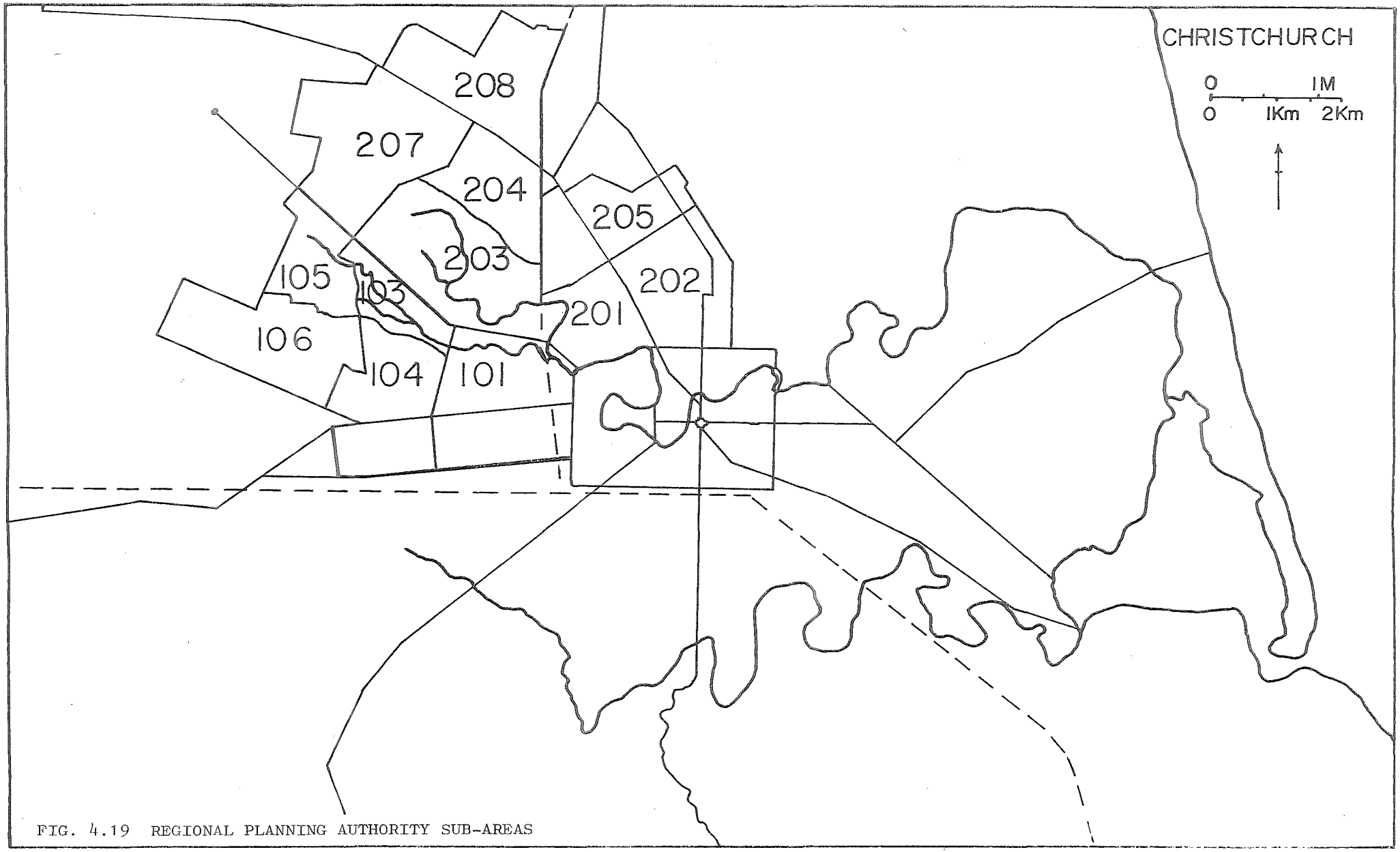

FIG. 4.19 REGIONAL PLANNING AUTHORITY SUB-AREAS

TABLE 4.31 RESIDENTIAL LAND AVAILABILITY IN THE NORTHWEST QUADRANT: 1971

Source: Regional Planning Authority Records

Regional Unit	Total Area (Ac.) 1971	Residential Area (Ac.) 1971 Occupied	Area Zoned Residential (Ac.)	% of Total in Residential use 1971	Unused Area of land zoned Residential (Ac.) 1971	% Occupied of Residential Land
202	686.9	476.8	485.1	69.4	8.3	98.3
201	426.3	318.5	320.3	74.7	1.8	99.4
101	868.4	541.7	554.6	62.4	12.9	97.7
205	387.6	264.5	274.7	68.3	10.7	96.1
204	760.5	497.7	518.9	65.5	21.2	95.9
203	908.6	574.0	622.7	63.2	48.7	92.2
103	311.3	215.3	226.1	69.2	20.8	91.2
104	734.3	354.7	390.9	48.3	36.2	90.7
106	826.6	342.7	573.8	41.5	231.1	59.7
105	413.6	210.2	251.6	50.8	41.4	83.5
207	952.4	383.7	509.4	40.3	125.7	75.3
208	783.9	301.3	525.0	38.4	223.7	57.4

1 ac. = 0.404686 ha

as 231.1 acres, and 223.7 acres in Bishopdale. The percentage of unused residential land follows a similar trend, with generally increased percentages in the peripheral areas, however there appears to be a distinct break in trend following sub area 104. All the areas before and including area 104 have been developed in excess of 90% of their computed residential capacity. For example, Merivale is 99.4% residentially developed; but it does not follow that after the remaining 1.8 acres are occupied that no further new housing development will occur, as new development may involve demolition of old homes and their replacement by new structures such as flats. Alternatively existing properties may be subdivided to provide building space. In more peripheral suburbs the percentage of unoccupied land is much greater. In subarea 106, Yaldhurst/Avonhead, for example, only 60% of the available residential land has been used, similarly in subarea 208, Bishopdale, only 57% of the residential land had been utilised in 1971.

These figures indicate that by 1971, there was little vacant residential land remaining in the present high status areas, approximately 5% on the average. Most of this remaining land (approximately 140 acres) though available on paper, may not be readily available in reality, either due to the unwillingness of the landowner to subdivide, build or sell, or lack of access to the sections. The implication arising from these facts is that most of the future development must either replace existing homes or subdivide existing properties

for building land, both factors may have important influences on future status structural change. If for example all the available housing land, either vacant or existing properties is exhausted, then new development can only be in the form of replacement of existing housing. Studies show(1) that the overwhelming majority of house replacement is by flats. However, flats (mostly luxury ownership flats) frequently have no appeal for those in the child raising phase of life, furthermore, the dominant aspiration of this group is to own a new home, thus these areas are largely precluded from their location choice. In time stylistic obsolescence will occur in the original homes in these older areas. Many of the elite will move from the stilistically obsolete homes to more modern homes, and with the influx of the young to middle aged families curtailed locational obsolescence of the area will occur.

(iii) High Rise Apartments. One of the predictions of the sector model was that after a time of outward high status area growth, some of the elite would break away from the major high status area and form new centrally located fashionable neighbourhood in an abandoned formerly high status area. Such trends have been observed overseas, J. Adams(2) considered such recent developments in the U.S.A., as a significant major new phase in residential structural change. Hoyt predicted a move back to centrally located luxury

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(1) In a later section.

(2) Personal correspondence.

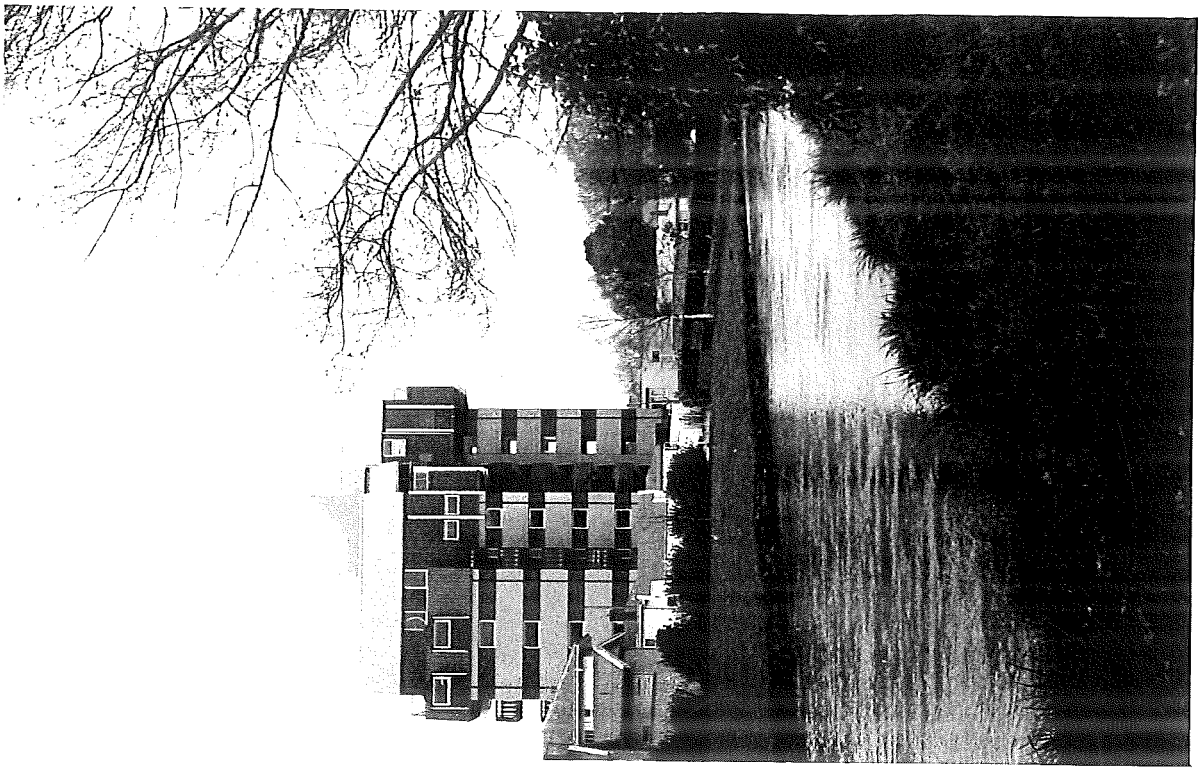

PLATE 20.: Newly completed high rise apartment - Carlton Mill Rd.

PLATE 21: Subdivision of property for private home building in the northwest - Clyde Road.

apartment buildings, which have replaced the original housing. In the U.S.A., much of the movement is back into renovated old tenement houses, rather than to new apartments. A similar trend is currently occurring in Sydney, where there are moves to restore the former residential/warehouse dockside area known as the 'Rocks'. Many of the stone and oak raftered warehouses, stables, factories etc. are being converted into luxury apartment quarters, and the old tenement houses restored.

Similar trends are unlikely in Christchurch, as most of the early homes were of wood with a limited life with high maintenance costs after 50-60 years. Something of a comparison can be observed with the demolition of old homes in Merivale, with the replacements being luxury ownership flats or town-houses.

An alternative has been found in the construction of luxury high rise apartment buildings (Plate 19; 20). The spatial location of the presently existing complexes are shown in Figure 4.20. Four are located around the northern fringe of Hagley Park within the inner edge of the present high status area in the northwest sector. The fifth is also centrally located in a former high status area, that of Cambridge Terrace, in which remnants of the former status ranking still remains.

These complexes offer self contained private ownership or rental apartments, centrally located, but still within or

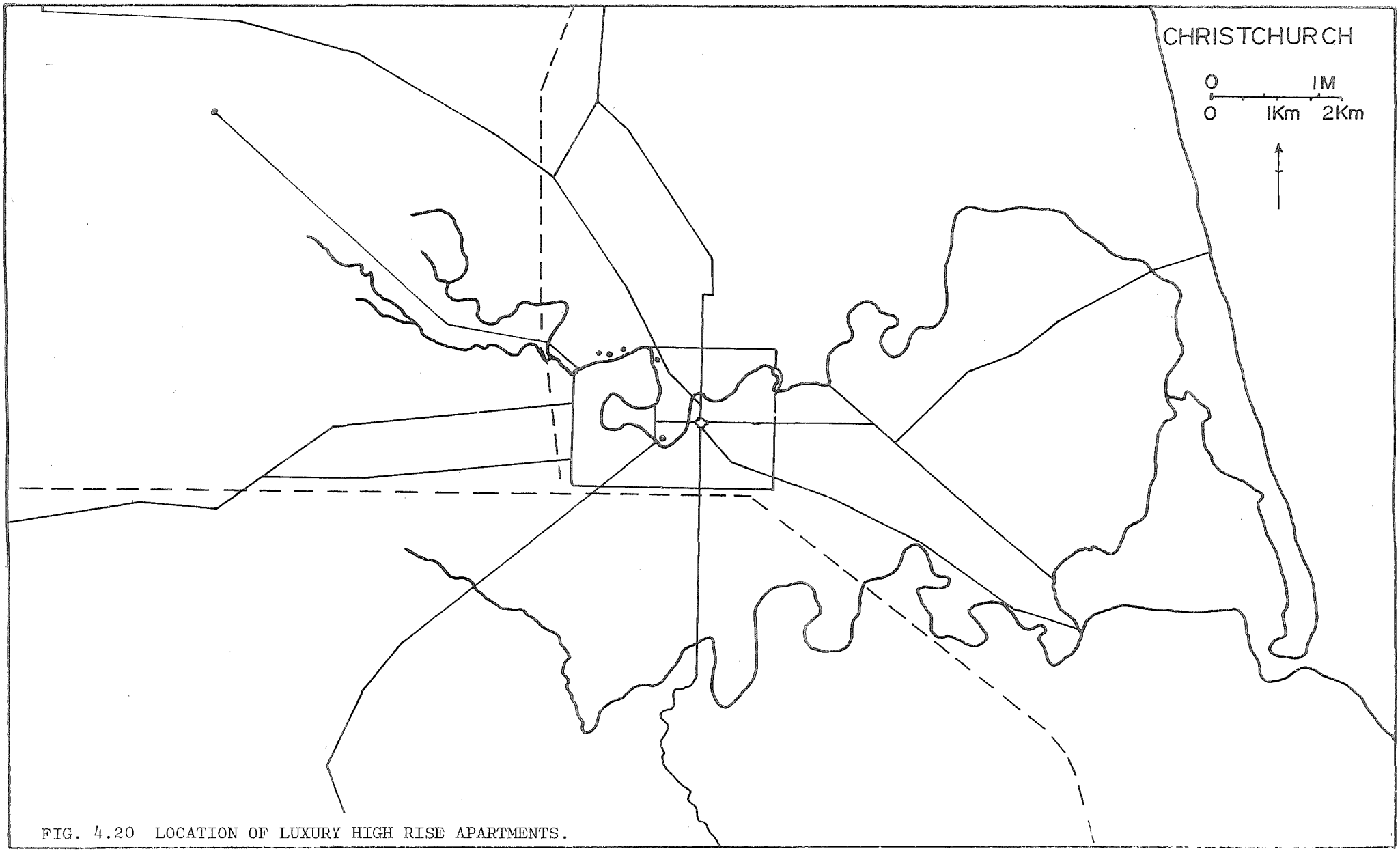

FIG. 4.20 LOCATION OF LUXURY HIGH RISE APARTMENTS.

on the fringe of the fashionable areas. Special appeal is for those retired couples with means, or single or married couples of all age groups, who have opted for a non-familism life style. The high status area change implication is that in common with the development of new ownership flats in older high status areas, with the high rise apartment offering additional residential locational options. The absorbtion capacity of an area is greatly increased with the high rise complexes offering accommodation for twenty to thirty households. Merivale, dominates in this respect, two already in existence and a third nearing completion.

(b) Housing Type and Residential Densities in the Northwest

It has been observed that in the inner high status areas of Merivale, Papanui, Inner Fendalton/Lower Riccarton, and Strowan/Papanui; the availability of residential land was less than 4% of the total land zoned for residential purposes. In Merivale, during the 1950's and 60's, there was an increasing trend towards the building of new multi-unit flats, with the area retaining its status ranking. Johnston (1969) suggested that the young prospective home owning elite have been able to locate in the core of the high status area. Many questions still remain unanswered; what is the role of property subdivision, of vacant land utilisation for building, and the attributes of multi-unit buildings as opposed to the private single dwelling?

Table 4.32 provides a comparison of single and multiple units, for selected areas at different time periods. The nature of the changes was indicated by the comparison of the percentage of dwelling types to the total number of dwellings. Two dominant trends were evident; within each sub-area there has been an increase in the percentage composition of multiple units, and that those areas with the highest initial percentage of multiple housing, recorded the largest gains. For example, St Albans (202) and Merivale (201) increased from 39% to 50% and from 47% to 59% respectively - an increase of 11% and 12%. Areas with low initial flat concentrations, Fendalton (203) and Strowan/Papanui (204) only increased 4% - from 9% to 13%. The magnitude of variation within the temporal changes also reflects spatial variation. Those areas with the highest flat concentration were centrally located. The western half of St Albans (202) and Merivale (201), the two areas with the highest absolute and relative concentrations of flats are both early established high status suburbs of Christchurch. Fendalton (203) and Ilam (103) more recently formed fashionable suburbs, have experienced a considerably lower level of flat development; an average concentration of about 15% compared with that for St Albans/Merivale, 55%.

As indicated in Table 4.32, similar basic trends are evident in the spatial division for different housing types, for sub-areas at different time periods. The percentage of land occupied by single units, although significantly higher than the percentage of multiple units, increases with distance

TABLE 4.32 BUILDING TYPE BY SELECTED AREA: 1966-72 Source: Regional Planning Authority Records

Area	Year	Nos.					Area (Ac.)					
		Single Units	% of total	Multiple Units	% of total	TOTAL	Single Units	% of total	Multiple Units	% of total	TOTAL	Sub-division of Lots available (Nos.)
202	1966	2022	(61)	1275	(39)	3297	370.6	(77)	105.8	(23)	476.4	
	1971	1875	(51)	1832	(49)	3707	340.9	(71)	135.9	(29)	476.8	
	1972	1863	(50)	1900	(50)	3763	337.6	(71)	139.8	(29)	477.4	
201	1966	970	(53)	867	(47)	1837	243.8	(77)	74.1	(23)	317.9	
	1971	907	(44)	1147	(56)	2054	229.4	(72)	89.1	(28)	318.5	
	1972	901	(41)	1280	(59)	2181	225.9	(71)	91.9	(29)	317.8	
101	1966	2053	(78)	568	(22)	2621	480.5	(89)	60.7	(11)	541.2	
	1971	2033	(76)	650	(24)	2683	476.4	(88)	65.3	(12)	541.7	15
	1972	2013	(74)	716	(26)	2729	471.7	(87)	70.2	(13)	541.9	
204	1966	2111	(91)	211	(9)	2322	444.0	(91)	44.6	(9)	488.7	
	1971	2141	(88)	283	(12)	2424	432.6	(87)	65.1	(13)	497.7	45
	1972	2137	(87)	321	(13)	2458	436.9	(87)	62.56	(13)	499.5	
203	1966	2284	(91)	235	(9)	2519	540.9	(95)	28.4	(5)	569.3	
	1971	2306	(88)	316	(12)	2622	533.7	(93)	40.4	(7)	574.0	77
	1972	2311	(87)	334	(13)	2645	534.7	(93)	41.5	(7)	576.3	
103	1966	706	(91)	72	(9)	778	200.9	(96)	8.0	(4)	208.9	
	1971	761	(85)	130	(15)	891	204.4	(95)	10.9	(5)	215.3	111
	1972	777	(84)	150	(16)	927	207.0	(95)	12.2	(5)	219.3	
104	1966	1316	(79)	370	(21)	1686	293.7	(87)	43.0	(13)	336.7	
	1971	1338	(73)	502	(27)	1840	298.2	(84)	56.5	(16)	354.7	46
	1972	1346	(72)	523	(28)	1869	299.9	(84)	58.9	(16)	358.8	

1 ac. = 0.404686 ha.

from the central areas and visa versa in the case of multiple units. There is also a trend towards increased acreage for multiple units. These developments closely reflect the patterns observed in regard to units of housing.

From a comparison of the data relating to household units and acreages in Figure 4.17D, it becomes evident that there are marked spatial and temporal variations in density characteristics.(1) The number of multiple units per acre identifies those areas specialising in flat development, and provides an index for comparison. For example, St Albans (202) and Merivale (201), previously identified as the two most important flatting neighbourhoods in the northwest quadrant, had densities in 1971 in excess of 13 units per acre, while the density in the outer areas is as low as five units per acre in Strowan/Papanui (204). Density of private homes show low spatial and temporal variation. Ilam (103) had the lowest density in both periods, with the average property being in excess of a quarter acre. This was followed closely by Merivale, with a quarter acre average. The more recent growth areas have an average of close to five homes to an acre, for example, Upper Riccarton (104) showing the 1971 average being 5.5 per acre, as was St Albans (202). The household density for sub-areas 202, 201 and 101 have remained stable between 1966 and 1971, with the density of the outer areas increasing. The inner areas remained stable, despite the decline in absolute numbers, as indicated in Table 4.32.

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(1) See Table 4.33.

TABLE 4.33 DENSITY OF UNITS AND PERSONS BY HOUSING TYPE:

1966-71

		Unites per acre			Persons per acre[1]		
		Single	Multiple	Combined	Single	Multiple	Combined
202	1966	5.5	12.1	6.1	18.2	39.9	22.8
	1971	5.5	13.6	7.9	18.2	44.9	26.1
201	1966	4.0	11.7	5.8	13.2	38.6	19.0
	1972	4.0	13.9	6.9	13.2	45.9	22.8
101	1966	4.3	9.4	4.8	14.2	31.0	15.8
	1972	4.3	10.2	5.0	14.2	33.7	16.5
204	1966	4.8	4.7	4.8	15.5	15.5	15.8
	1972	4.9	5.0	4.9	16.2	16.5	16.2
203	1966	4.2	8.3	4.4	13.8	27.4	14.5
	1972	4.3	8.0	4.6	14.2	26.4	15.2
103	1966	3.5	9.0	3.7	11.6	29.7	12.2
	1972	3.8	12.3	4.2	12.5	40.6	13.9
104	1966	4.5	8.6	5.3	14.9	28.4	17.5
	1972	5.5	8.9	5.2	18.2	29.4	17.2

(1) Density in persons per acre are a reflection of the household density data, since the persons density was obtained by multiplying each corresponding unit figure by 3.3. Table 4.30 shows that the density of persons per unit was unchanged at 3.3 between 1956 and 1966.

The pattern of population density changes is also of interest. The city wide net population density in 1966 was 17.3 (Table 4.30). Generally the density of persons per single dwellings, was less than the city average, only St Albans (202) in 1966 had a higher average, that of 18.2. The densities associated with multiple units, however is in general considerably higher. In 1966, the densities in St Albans (202) and Merivale (201) were 39.9 and 38.6 persons per acre respectively. Only one area, Strowan/Papanui (204) remained below the city average, at 15.5 persons per acre.

The high levels of multiple unit dwellings in Merivale, that of 1280 in 1972 and the high density of flat units, 14 per acre, and population of 45 per acre; while retaining a high status ranking illustrates the potential for population absorbtion in other more recent fashionable areas. For example, Ilam (103) in 1972 contained 150 multiple units, only 16% of the total, with a single dwelling density of only 3.8 units per acre and an average population density of 14 persons per acre; illustrating the tremendous absorbtion capacity remaining.

(c) Land Use Changes in High Status Areas: 1951-71

Land use maps prepared by the Canterbury Regional Planning Authority at different times, permits analysis of housing type changes, relating to many of the processes outlined earlier. Three sub-areas in the northwest have been selected (Fig. 4.21): representing a transition from an old

TABLE 4.30 DENSITIES COMPARED: 1956-66

1956	1966	
10,855	13,500	(Acres)
181,342	233,319	(Nos.)
54,336	70,299	(Dwelling Units)
16.7	17.28	(Persons per ac.)
4.7	5.2	(Units per ac.)
3.3	3.3	(Persons per unit)

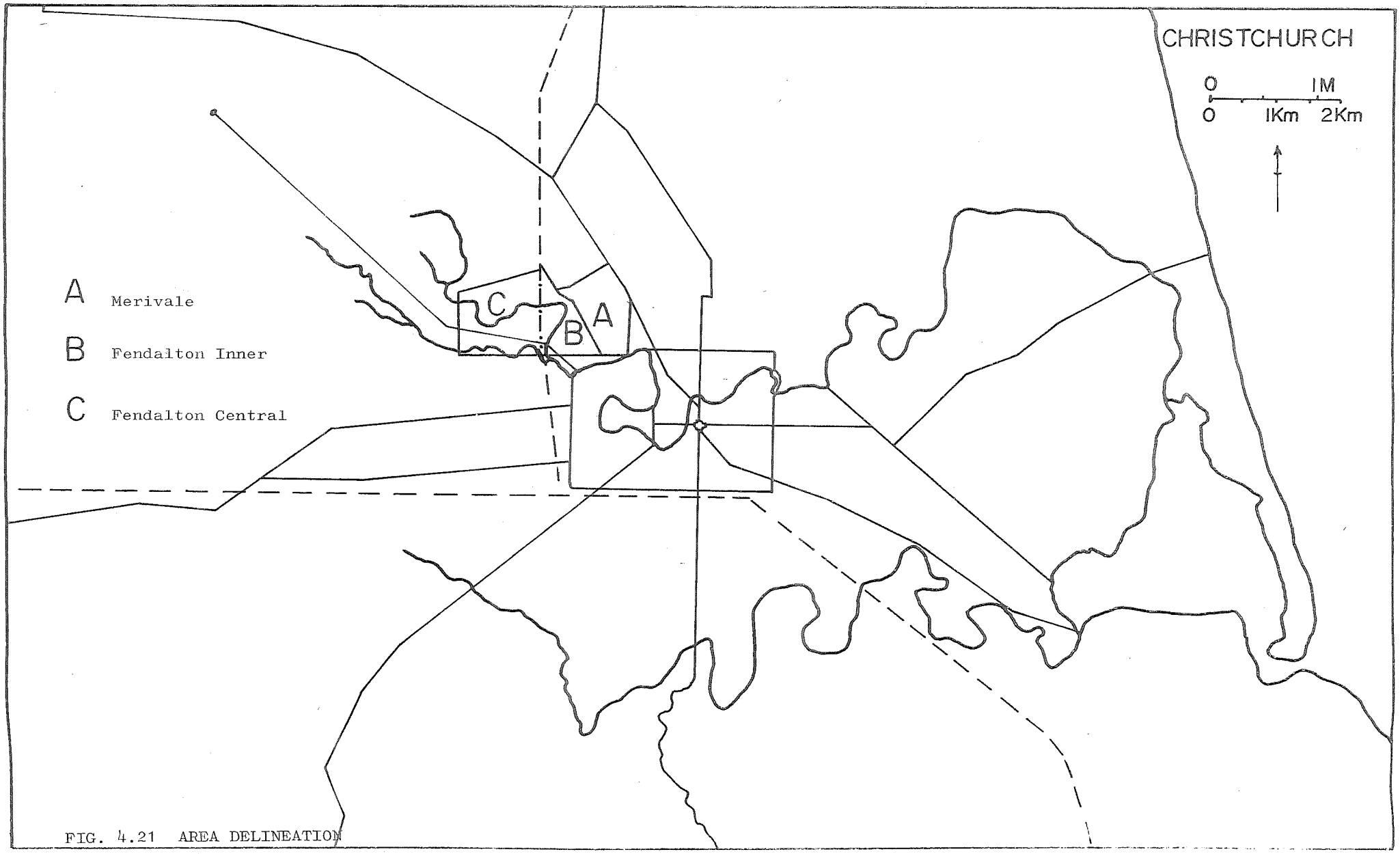

FIG. 4.21 AREA DELINEATION

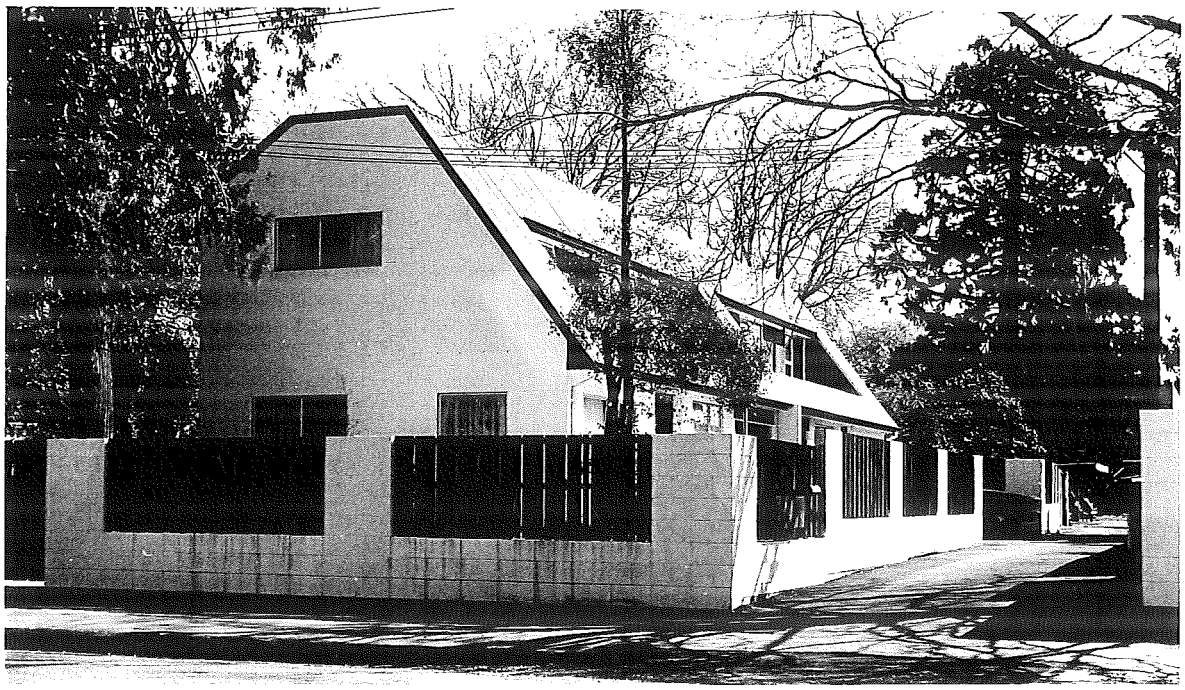

PLATE 22: Subdivision of property for multi-unit development in the northwest - Clyde Road.

well established high status area - Merivale (A); through an intermediate area - Inner Fendalton (B); to the more recently settled fashionable area - Central Fendalton (C), the recency of which is more particularly applicable in the mid 1950's. The land use maps of Figures 4.22A, 4.22B, and 4.22C, using the maps of 1955/6, 1966 and 1971, therefore forming two time periods, that of 1955-66 and 1966-71.

Previous study has suggested that certain basic spatial and temporal trends should be evident; for example, higher concentrations of multiple units in the older areas, the infilling of vacant land, and subdivision of existing properties for private home building dominating in the more recent years (Plates 21 and 22). During the three time periods, there should be a diminution of vacant land, an increase in house replacement in the older areas and subdivision in the newer areas.

Figure 4.23 and Table 4.34 tend to confirm these predictions. Within the first period, 1955/6 - 66, it is evident that the outer area (C) dominates in the addition of new single unit homes, around 60%. The inner area (A) Merivale, dominated the additions of multiple units with 74%. Area (B), Inner Fendalton, occupies an intermediate position with more new homes than Merivale (area A) and more flats than that of area (C), Central Fendalton. Similarly Central Fendalton area (C), overwhelmingly dominated the new home occupation of vacant land, that of 85.5%, area (B) Inner

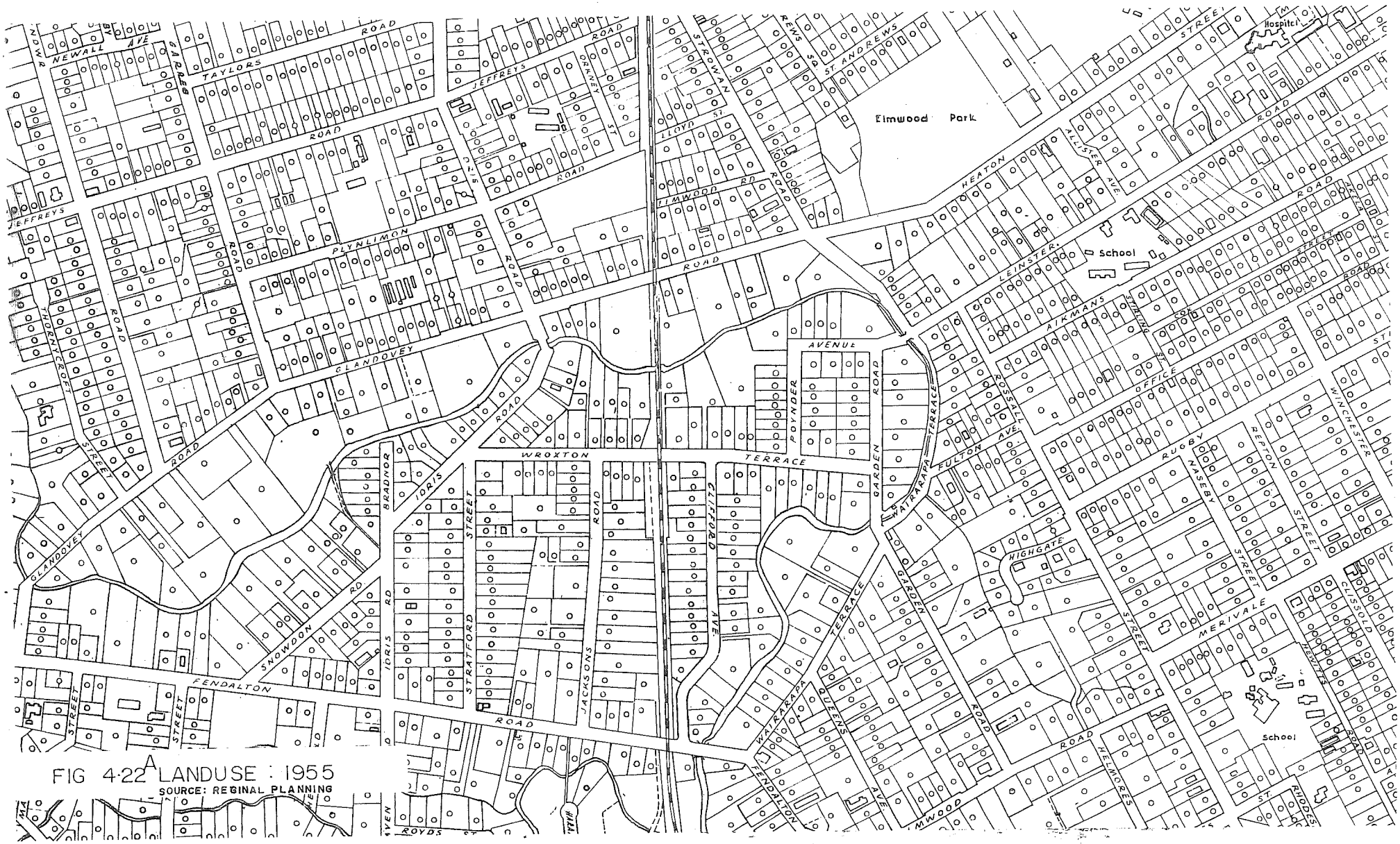

FIG 4·22 A LANDUSE : 1955

SOURCE: REGIONAL PLANNING

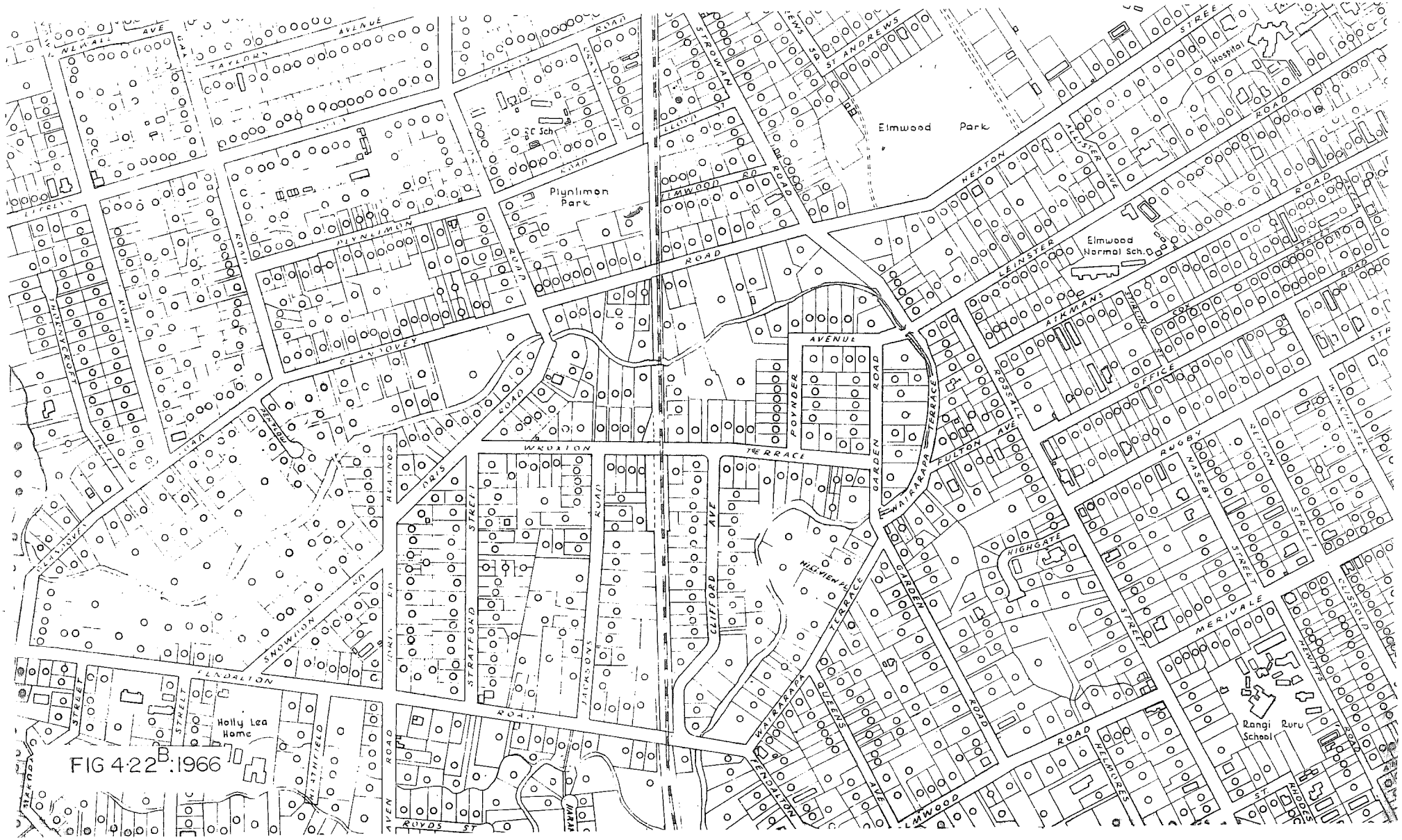

FIG 4·22B: 1966

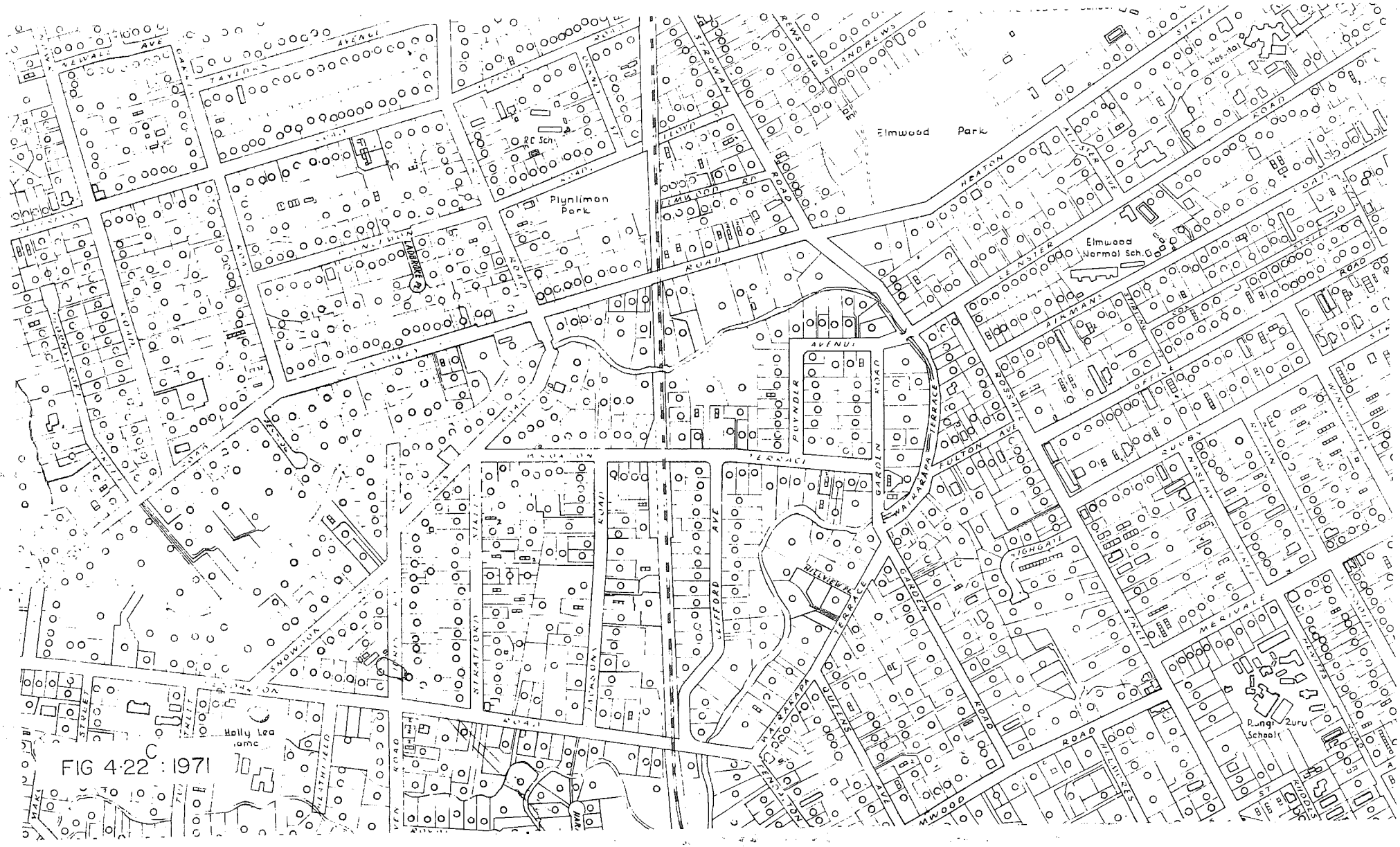
Elmwood Park
Plimlimon Park
Elmwood Normal Sch.
Holly Lea
Rangi Ruru Schools

FIG 4·22 : 1971

FIG 4·23 RESIDENTIAL LANDUSE CHANGE : 1955-1971

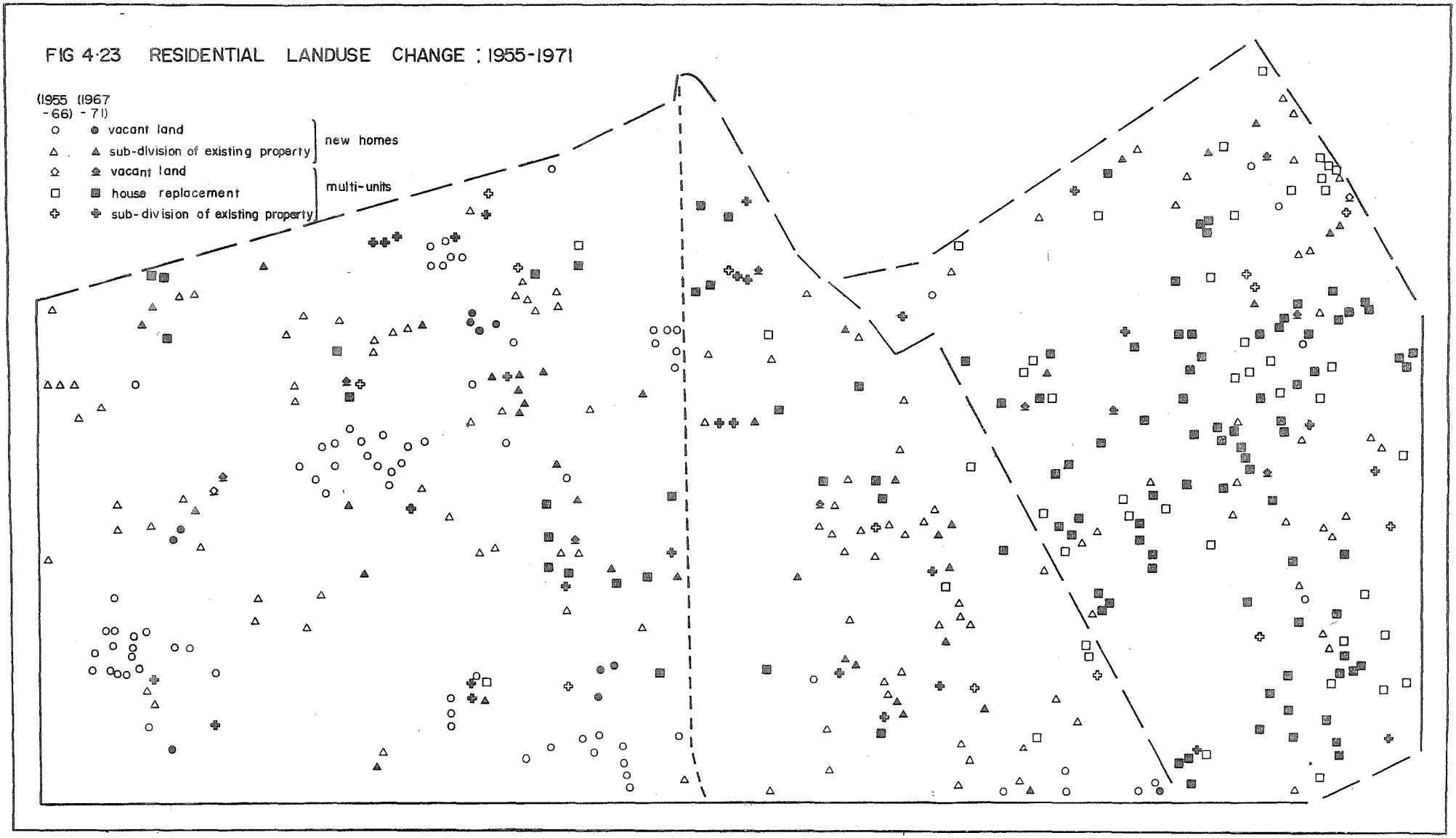

TABLE 4.34 HOUSING TYPE CHANGES IN THREE AREAS OF THE NORTHWEST: 1955/6-71

1955/6-71

Area[1]	New Homes[2]	Vacant Land	Sub-division	Multiple Unit Complexes Added	Vacant Land	Sub-division	Replacement
A Merivale	34(17.9)	5(6.6)	29(25.4)	46(74.2)	1(50)	5(41.7)	40(83.3)
B Fendalton Inner	42(22.1)	6(7.9)	36(31.6)	10(16.1)	-	4(33.3)	6(12.5)
C Fendalton Central	114(60.0)	65(85.5)	49(43.0)	6(9.7)	1(50)	3(25.0)	2(4.2)
TOTAL	190(100)	76(100)	114(100)	62(100)	2(100)	12(100)	48(100)

1966-71

A Merivale	7(13.2)	-	7(16.7)	87(62.1)	4(44.4)	6(22.3)	77(74.0)
B Fendalton Inner	16(30.2)	1(9.1)	15(35.7)	23(16.4)	2(22.3)	9(33.3)	12(11.5)
C Fendalton Central	30(56.6)	10(90.9)	20(47.6)	30(21.5)	3(33.3)	12(44.4)	15(14.5)
TOTAL	53(100)	11(100)	42(100)	140(100)	9(100)	27(100)	104(100)

(1) For area delineation see Figures 4.35 and 4.36

(2) The land use maps did not identify new homes which replaced existing areas (this however is rare especially in Fendalton).

Fendalton showing a 7.9% increase and Merivale (area A) that of 6.6%. Distribution of property subdivision for new homes was more balanced, but once again area (C) Outer Fendalton dominated but with only 43%. Merivale again assumed the other extreme, although it was evident that even in 1966, there was still a significant number of large properties available for private home subdivision. In terms of vacant land for multiple flat development in the first period, the situation is markedly different, with only two of the 62 complexes being built on vacant land; likewise, few flats were built on subdivided land, only 12, with the majority of the development being private home replacement. However, no distinction can be drawn between house conversion and new flat construction. Table 4.29 and Figure 4.15, indicates that the Merivale/St Albans suburbs dominated house conversion, however, they dominated to an even greater degree the building of new flats, especially during the 1962-66 period (Fig. 4.12 and Table 4.28). This suggests that new flats may outweigh house conversion. An undisputed fact however, is the dominance of multiple-units additions in Merivale (A) 83%, with only 4.2% added in Central Fendalton (C). An interesting observation is that in terms of numbers, while new homes may exceed flat additions by approximately three to one, more flats than homes were added in Merivale.

Observed basic trends of the first period, continued during the second period, that of 1966 to 1971. There were a number of changes however, reflecting both temporal and

spatial differences. The previous low proportion of new home additions of Merivale (A) dropped even lower, with Outer Fendalton (C) experiencing a relative drop also, but still retaining its relative position. The differences were added to area (B), that of Inner Fendalton. This supports Johnston's (1969) argument that during the period 1951-66, the core area closely identified to Inner Fendalton, represented the location choice of many of the elite. It is also significant, that over 90% of the new homes built in the Central Fendalton area, were on vacant land, compared with only 9.1% for Inner Fendalton, and none for Merivale.

The outward progression of land utilisation and subdivision through the fashionable areas as suggested by Johnston (1969) is substantiated; 100% of the new homes in Merivale was on subdivided land, 93% for Inner Fendalton, and 66% for Central Fendalton. The absolute decline in new houses in the area as a whole, is also evident. During the first period, an average 19 new homes were added per year, in comparison with only 10 per year in the second period. However during this same period, an opposite trend was occurring within the construction of multiple units; in the first period approximately six complexes were added per year, but 28 were added per year during the second period. Dominance of this trend was largely due to the dramatic increase in Merivale, where over17 units were added per year in the second period, compared with less than 5 during the first period.

A significant trend was the increase in the percentage of flats in the Central Fendalton area, that of less than 10% to one of over 20%, perhaps illustrating the maturity and increasing density occurring in the high status core area during the late 1960's. Property subdivision increased in terms of absolute numbers, especially in the outer area, from 25% to 44%. The dominance of house replacement by multiple units in Merivale, during the second period, decreased from 83.3% to 74%; this decline was due to an increase in both Fendalton subareas, with the greatest gain being recorded in the outer area, that of 4.2% to 14.5%.

All these trends observed, represents confirmation of the processes suggested by Johnston (1969) but not accompanied by empirical evidence. During the period of 1955-71, 243 homes and 202 multiple unit complexes were added; if there were approximately 4 units per complex, giving a total of 1051 units and with an average of 3.3 persons per unit (Fig. 4.18B), then a possible extra 3468 persons were located in these three areas during the time period of 1955-71(1). This addition was in already established suburbs, for example, Merivale, the oldest of the present fashionable areas, gained an additional 480 persons. These trends indicate the absorbtion capacity of the more recent high status areas in the northwest.

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(1) This figure is one of supposition and possibly therefore inflated, as some of the flat development involved house replacement or conversion.

CHAPTER FIVE

CONCLUSION

5.1 EVALUATION OF CLASSICAL THEORY

The Burgess - Hoyt models have provided a useful framework in the study of residential structure - the spatial form and relationship with other social groups, and the commercial centre of high status segregation are emphasised. However, the theoretical patterns were only partially relevant, for example, a concentric zone was evident in 1878, but it occupied a central rather than peripheral location. The concentric pattern had almost totally given way to a sectoral pattern by 1930; however, statistical analysis showed that there was no single dominant pattern. The contemporary pattern was shown to be unmistakably sectoral and the dominant high status area in the northwest had stabilised, forming an enclave mid-way between the city centre and the urban periphery.

The closeness of the initial (1878) concentric pattern to the Cathedral Square resulted in early disintegration resulting from commercial expansion, particularly on the southern side. Thus it was evident fairly quickly that sectoral or axial high status growth dominated the pattern of outward movement. Yet in many respects, the pattern of high status change in Christchurch was at variance with the

sector hypothesis; for example, outward high status movement after the 1930's failed to keep pace with general population growth, with the direction of this movement, showing a marked deflection - essentially and inevitably following the boundary of Hagley Park.

Many of the points outlined by Hoyt as causal explanations of high status change, are of doubtful relevance to Christchurch. There are many examples of prominent leaders of the community choosing residential locations in areas which later developed into middle or low status suburbs. Real estate promoters or property developers appeared to have little influence. The direction of change into Merivale, Papanui and Fendalton represented a 'natural' response rather than artificially continued, although the timing of subdivision and releasing of farm land for housing may have been important in shaping local variation. The presence of secondary commercial or business centres, likewise was of doubtful impact. Following the initial nodal development in the 1860's and 70's, outward growth extended outward in a generally concentric manner. Finally, although Christchurch early developed a comprehensive tramway network which allowed the elite to break the work-residence ties, the same was true of lesser social groups. The tramway conferred no special favour on elite, with equally satisfactory services being provided for the working class suburbs of Sydenham, Waltham, Woolston etc. Furthermore the flatness of Christchurch has meant that a ubiquitous patterns of transport has developed

with many taking advantage of the locational freedom which the bicycle offered. One of the problems in this respect is that Hoyt did not distinguish between those causal factors which are mutually exclusive, such as the most physically desirable areas; and those which are not, such as the influence of fast transport routes, which may equally effect the locational change amongst lower social groups, therefore making it difficult to measure the importance of such a factor.

There are however, at least three factors which appear to have been important in determining the high status area change. The high status sector has formed on the commercial or business side of the city centre far removed from industrial development, which is considered the greatest threat to high status area survival, not only resulting from greater residential incompatability with industry, but also because working class suburbs are generally found clustered around industrial areas. Equally important as a causal factor, was the attraction of the desirable physical features outlined by Hoyt. The elite are not only attracted to hillside locations for the view and privacy provided, but because of the prohibative housing costs for the lower social groups, there is little danger of middle class development in the area, therefore providing an important further incentive, that of security. On the plain there is slight but significant variations in elevation from west to east influencing the pattern of drainage and flooding. The movement of the high status area in the northwest generally followed the higher land and into the area of Fendalton with a dense network of tributary streams

of the Avon, providing much sought after River frontages. Finally, the question of free and open country appeared to be important, at least until the last few decades. High status moved north into Merivale, St Albans and Papanui along Papanui Road and westward into Fendalton, however the northern expansion was blocked by middle class housing development and state housing in Bryndwr, thus deflecting future growth further westward towards the open land of Ilam and Avonhead. One failing however, in reference to the physical environment, was the omission of parks as attractive forces, or even as physical barriers within a city - both influencing the shape of residential structure. The combination of the Avon River, Cranmer Square and Hagley Park ensured popularity for the area immediately west of the square. The elite continued to live close to the Park throughout the movement north and west into Fendalton. More importantly perhaps was the impact on high status growth as a barrier to widespread residential growth particularly of the lower and middle classes or commercial and industrial development. Thus in the early 20th Century when middle class suburbs in St Albans, Papanui and Riccarton restricted growth in these areas, free and open land remained in Fendalton off the northwestern corner of the Park - the farthest point from the city centre.

Three further deficiencies exist in the relevance of the sector model to Christchurch. The application of the model is essentially restricted to the mass public transport age. The importance of the tramway as a means of transport

persisted paramount from the turn of the century through the 1930's and 40's. But even in this period the flatness of the site and the direction of city growth has meant that all areas have been more or less equally accessible to the city centre, and especially with the use of the bicycle which was little effected by the presence of Hagley Park since numerous tracks led across the park. However since the 1950's and 60's the universal ownership of the private car has introduced an element of much greater locational freedom, not just to the elite but also the middle and even lower classes. One effect on the elite has been the emergence of pockets of high status areas in the numerous hill valleys along the southern fringe of the city far removed from the main transport routes. Further more the sector theory made no provision for the impact of the public sector in the housing market. The paternal attitude of governments since the 1930's has been to provide the poor with low cost housing, generally located in outer suburban locations, thus altering the conventional formula of low status control - high status periphery. More importantly the generous finance conditions offered to young middle class families has resulted in the past few decades in a tremendous expansion of middle class suburbs. In Christchurch much of this development has taken place in the northwest where middle class suburbs have surrounded the elite areas isolating them from open land and restricting outward development. Thus a combination of rising wealth amongst the middle class, universal car ownership and generous housing finance have allowed the middle classes to compete successfully

with the elite for the choicer residential land and so invalidate many of the assumptions of the sector model, such as the importance of the elite in residential growth patterns, the outward pressure exerted by lower social groups from the city central area, the relevance of public transport to residential growth.

The final deficiency relates to the failure to explicitly consider the self-perpetuating nature of high status areas when there are few threats and social consciousness remains high. Thus in the absence of pressure from commercial or industrial expansion or lower social groups the high status area in the northwest has retained its dominant position with little outward expansion, presumably few of the elite felt any need to shift.

Classical theory suggests that migration in terms of an 'invasion and succession' or 'filtering' process as the principle mechanism of social area change, however, the role and characteristics of the migration process are questioned in the Christchurch experience. For the first fifty years, the central area remained the dominant high status area, an area in general less than half a mile from the Cathedral. The principle period of outward growth into the northwest appears to have been in the two or three decades after the turn of the century, thereafter there was slow outward growth, consolidating the high status area in the northwest, the centre less than two miles from the city centre. In the

period of rapid outward extension, migration was important. However since the 1930's outward growth appears to be in terms of new arrivals and reorganisation within the high status areas with a gradual filtering outward and natural death along with some net abandonment on the inner area of the high status sector. The slow outward growth can in part be explained in terms of increasing residential densities, with new prospective home owners able to build on vacant land or sub-divide many of the extensive sections or live in luxury Town Houses.

The deficiencies of the sector theory in terms of the process of change are two-fold, stemming from cross-cultural difficulties. American society is characterised by ethnic difference, similar ethnic differences have not been a significant factor throughout the history of Christchurch. Although social differences were evident, again they were not as great as those in America with large numbers of poor migrants from southern and eastern Europe. By contrast most New Zealand migrants were from Britain or the Commonwealth. The second difference is the smaller migrant flow into Christchurch than those experienced by many American cities. Also, because of the more uniform socio-economic background of Christchurch's migrant population many of the migrants moved directly to a wide range of city locations, and even the poor moved to working class suburbs such as Sydenham, Waltham, Woolston, Opawa etc. rather than high density city central slum tenement blocks. Thus, there was never the same pressures from the

city central area pressing on the high status suburban areas that American cities experienced in the 19th and early 20th centuries.

5.2 TOWARDS A GENERAL INTERPRETATION

To a large degree classical theory has been found to be time and culture specific. (Schnore (1965) modified the theories to achieve greater cross-cultural application by relating residential structure to the technological stage of society. Johnston (1963), further adapted the evolutionary model to on-going cultural change, particularly relevant to the Australasian experience. The Christchurch study suggests, at least in part, the relevance of both classical and evolutionary theories (Fig. 5.1).

The residential structural patterns of Christchurch may be related to the level of technological development. Centrally located high status areas were identified as pre-industrial revolution patterns. Johnston (1973) suggests that the elite and artisan groups each live in their own quarter of the city. However the pattern in Christchurch indicates a zonal distribution centrally located as outlined by Schnore (1965). This may in part be attributed to the unique historical experience of Christchurch, in which the monied class were given the first opportunity to purchase land, selecting land along the river, principal roads and around the central area with some building homes fronting

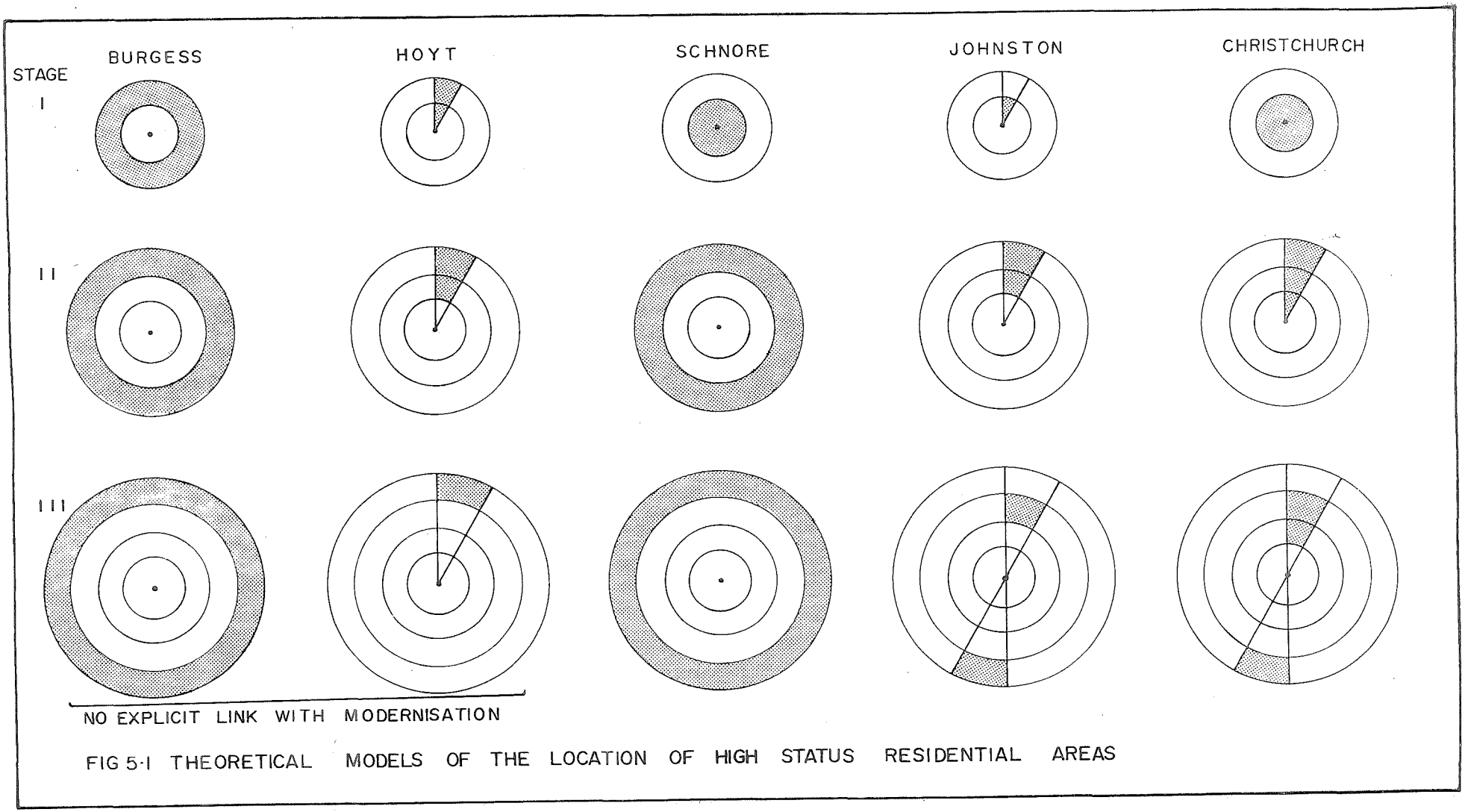

FIG 5·1 THEORETICAL MODELS OF THE LOCATION OF HIGH STATUS RESIDENTIAL AREAS

onto Cathedral Square. Thus those of lesser means were forced to buy and live on the cheaper peripheral areas.

Residential segregation became more pronounced with the development of industrialisation. Expansion of the commercial centre immediately to the south of Cathedral Square, resulting in a partial disintegration of the initial inner high status zone. Correspondingly, the introduction of factories, foundries, tanneries, wool scourers and mills adjacent to the railway line attracted working class suburban development in Sydenham, Waltham, Woolston and Opawa, again restricting the residential options of the elite. The elite concentrated outward growth into the northwest sector, representing a reversal from central to peripheral preference. The sector model is particularly relevant in suggesting causal factors of change during this 'transition' phase in the first few decades of the century, emphasising in particular the attractiveness of the hills, stream frontage, and dry open land readily accessable to the central area. The high status pattern does not entirely conform to the sector theory as outward expansion resulted mainly from new arrivals or migrants from other parts of the city seeking 'desirable' locations. There was little abandonment of homes to commercial or lower-status expansion, particularly on the western half and more widely scattered areas in the north and east of the central area. This period was also marked by rapidly growing middle class residential growth; a group more closely related to city central commercial rather than industrial employment and

of generally increasing affluence. Thus the middle classes were better able to compete with the elite and pressed against the high status areas with suburban development of St Albans, outer Papanui and Riccarton, further restricting the location options of the elite.

The importance of the middle class as determinants of residential structural patterns continued to increase with the industrialisation and increasing division and specialisation of labour. The froundations of a paternalistic welfare state were laid in the 1930's. Housing assistance and the universal ownership of the car allowed the middle class areas to outflank the elite areas of Merivale and Fendalton thus demonstrating the ability of the middle classes to compete for the most desirable land on the plain, with the elite pockets of the hills maintaining their security. The slow increase in membership of the elite (particularly compared with that of the middle class), and the initial low housing density in the high status areas of the northwest, have allowed much of the natural increase of the elite to be absorbed within this area and have ensured its continuing high social status, essentially halting outward growth.

5.3 PROBLEMS AND PROSPECTS

A longitudinal study of the nature of the present one inevitably strikes difficulties relating to the temporal dimension. The initial problem was to establish an indicator of social status of acceptable validity spanning a period from the mid-19th century to the present. The paucity of documentary evidence or even secondary sources relating to 19th century social and occupational status groups in Christchurch led to a number of assumptions upon which evidence and later conclusions are based. However, it has been felt that the alternative courses were adequately explored and that the best one in the circumstances was chosen.

The time constraints placed on this study led to the selection of three key dates for close investigation with the intervening periods considered at a more general level in a variety of ways. However, this can be viewed as an unfortunate compromise, since a number of the basic observations and conclusions are necessarily tentative. The addition of another two dates, preferably at the turn of the century and in the 1950's would add greater weight to the study and particularly allow a more meaningful interpretation of the patterns and processes of change.

Similarly, the constraints of the study and the difficulties associated with identifying lower socio-economic groups are inevitable but given sufficient time it should be

possible to identify at least three social groups from Wises directories. This would allow the scope of investigation to be broadened to include a comprehensive study of residential structure in Christchurch, extending back into the 19th century. Such a study, particularly if five time periods were used, is admittedly a very large undertaking, and one possible solution might be to focus on a more limited time span. Three or four dates selected perhaps centering on the turn of the century (when the numbers involved are still relatively small) preferably spaced at decade intervals, allowing a detailed migration study to be incorporated, should provide the basis of useful study. Alternatively, sampling methods may be employed to overcome the problem of the time consuming task of extracting acceptable data from Wises directories.

Nevertheless despite the obvious limitations and difficulties, the study has demonstrated the value of post office directories in identifying and analysing residential structure and change, particularly in allowing the study to extend back to the early formative years of the city. The use of professional occupational groups has permitted the testing of many of the concepts outlined in the Classical models. These models, in particular the sector model, have provided an invaluable framework for analysis, and in a more limited way a descriptive and explanatory tool in the study of high status residential structure. However an investigation of Christchurch, covering a century of the city's history, has illustrated the on-going nature of residential structure

and underlined the time and possibly culture-specific nature of the Burgess - Hoyt models. The spatial patterns of elite reflect the transition from pre-industrial to a modern industrial, sophisticated society. Location has retained its importance as a status symbol but stylistic and technological attributes have lost much of their status value, these trends are reflected in the permanence and continued concentration of elite in older high status areas. Style and technological innovation may again assume greater importance, thus resulting in wholesale movement away from the aging high status areas of the northwest. The exact pattern of the future is open to conjecture, however a better understanding of the forces and processes which have shaped the past may help in solving one of the basic problems facing modern society, "to build the future city in such a manner that the advantages of urban concentration can be preserved for the benefit of man" (Harris and Ullman 1945, 7).

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APPENDIX

A: Analysis of Variance Data

B: Centrographic Analysis

C: Distribution Data Mapped

APPENDIX A ANALYSIS OF VARIANCE

TABLE 1(a) Sample Data Using Twenty Four Sectors[1]: 1973

		SECTORS																							
		a	1	b	1	c	1	d	1	e	1	f	1	g	1	h	1	i	1	j	1	k	1	1	1
NOTES	1	X	1	-	1	X	10	X	1	-	1	X	-	X	-	-	-	X	-	X	-	-	-	X	1
	2	2	3	16	6	2	5	0	2	1	3	-	1	-	2	-	2	-	-	-	-	-	-	-	-
	3	4	5	14	7	15	2	1	1	-	2	-	-	-	-	-	-	1	-	-	-	1	-	-	-
	4	3	2	12	6	-	0	-	0	0	1	-	1	0	0	-	-	-	-	4	3	-	-	0	0
	5	-	2	2	1	1	0	0	0	0	0	-	-	0	0	3	0	0	0	10	0	0	0	0	0
	6	0	-	0	1	0	0	0	0	0	0	1	-	0	0	0	0	0	0	0	0	0	0	0	0
	S.D.	1.7	1.72	7.3	2.9	7.0	4.0	0.7	0.6	0.6	0.95	0.4	0.5	-	1.15	1.3	1.0	0.6	-	4.7	1.5	0.5	-	-	0.6
	$\bar{x}$	2.25	2.16	8.8	3.66	4.5	5.66	0.5	1.33	.33	1.75	0.2	0.33	-	.66	.6	.5	.33	-	3.5	.75	.25	-	-	.75

TABLE 1(b)

NOTES	1	X	-	8	6	X	2	X	4	3	-	X	-	X	4	-	-	X	-	X	-	-	1	X	4
	2	2	2	-	6	6	6	1	-	-	2	1	1	1	-	1	-	-	-	-	-	-	-	-	-
	3	1	-	3	-	2	3	-	1	-	-	-	-	-	-	-	2	1	-	2	-	-	-	0	0
	4	-	-	-	-	-	-	0	0	0	0	0	-	-	0	-	-	-	0	2	1	0	0	0	0
	5	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	0	0	1	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0	0	-	-	0	0	0	0	0	0	0	0	0	0	0	0
	S.D.	0.95	1.0	3.8	3.5	2.8	2.1	0.7	2.1	1.7	1.2	0.4	0.4	0.7	2.0	.4	1.2	0.4	-	0.95	0.4	-	0.4	-	2.8
	r	0.86	-.48	.38	.9	.97	.1	.49	.97	-.49	.99	1.0	1.0	.86	-.33	-.49	.99	-	-	-	.16	-	-	-	-

TABLE 1(c)

NOTES	1	X	6	1	1	X	1	X	-	5	1	X	1	X	-	-	2	X	2	X	1	-	5	X	5
	2	0	0	0	-	1	1	-	-	0	0	0	-	-	-	0	-	-	-	-	0	0	-	-	0
	3				0	0	0	0	0				0	0	0		0	0	0	0			0		
	4																								
	5																								
	6																								

(1) For sample locations see Figure 2.12

X = Population present but no sample location

0 = No population present, therefore no sample location

- = Sample location present, but no prefessionals.

APPENDIX A (cont.)

TABLE 2(a) SAMPLE DATA USING FOUR SECTORS[1]: 1973

Zones	Sectors			
	A	B	C	D
1	12	2	-	1
2	34	7	4	-
3	47	4	1	1
4	23	2	-	7
5[2]	7	1	3	10

TABLE 2(b) : 1930

Zones	Sectors			
	A	B	C	D
1	16	7	4	5
2	22	5	2	2
3	9	1	3	3
4	-	-	-	1

TABLE 2(c): 1878

Zones	Sectors			
	A	B	C	D
1	14	7	6	14
2	7	2	1	3

(1) For sample locations see Figure 2.12.

The sample data of Table 1 (App.A) has been combined into four sectors for 1973 and 1930, but in 1878 because of the low numbers all values have been included in the analysis.

(2) Zones 5 and 6 of Table 1 (App.A) have been combined.

APPENDIX B: CENTROGRAPHIC ANALYSIS TABLE 1 : CENTRO DATA FOR ENTIRE CITY

	PROFESSIONALS						TOTAL POPULATION						% PROFESSIONALS					
	1973		1930		1878		1973		1930		1878		1973		1930		1878	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
CENTROIDS (MEAN CENTRE)	10.945	7.365	12.130	7.475	12.251	7.743	12.270	7.276	13.196	8.104	12.525	7.902	11.441	7.290	12.322	7.559	12.464	7.92
ROTATED STANDARD DEVIATION	1.883	3.871	1.795	3.350	0.975	0.646	4.394	3.339	2.789	2.858	1.316	0.820	2.051	4.093	3.029	3.127	0.494	0.655
ANGLE OF ROTATION (of Y axis)	37.824°		35.350°		154.973°		7.279°		14.780°		148.908°		37.070°		19.541°		21.907°	
STANDARD RADIUS OF ELIPSE	4.304		3.801		1.170		5.519		3.993		1.55		4.578		4.353		0.821	
COEFFICIENT OF CIRCULARITY	0.486		0.536		0.663		0.760		0.976		0.623							

TABLE 2: CENTRO DATA FOR FOUR QUARTERS : PROFESSIONALS

	1973								1930								1878							
	NW		NE		SE		SW		NW		NE		SE		SW		NW		NE		SE		SW	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
CENTROIDS	9.574	5.948	15.123	5.558	17.556	11.979	11.119	11.995	10.761	6.169	14.64	6.651	16.983	10.613	11.632	11.67	11.845	7.055	13.18	7.6	12.937	8.275	11.807	8.473
S.D.	1.611	1.044	2.267	1.483	3.781	1.382	2.280	0.777	1.172	0.784	2.613	0.881	3.599	3.237	0.989	2.099	0.481	0.669	0.706	0.348	0.478	0.201	0.778	0.44
ROTATION	0.491°		5.658°		4.538°		50.705°		155.817°		170.072°		20.426°		80.262°		80.169°		158.604°		167.344°		157.147°	
RADIUS	1.920		2.709		4.026		2.409		1.410		2.758		4.841		2.320		0.824		0.787		0.519		0.894	
CIRCULARITY	0.648		0.654		0.366		0.341		0.669		0.337		0.899		0.471		0.719		0.494		0.421		0.567	

TABLE 3: CENTRO DATA: FOUR QUARTERS : TOTAL POPULATION

CENTROIDS	8.948	4.844	16.257	5.794	15.860	10.737	8.847	10.298	10.671	5.645	14.999	6.382	15.042	10.075	10.923	9.94	11.688	6.788	13.403	7.342	13.393	8.697	11.699	8.938
S.D.	2.175	1.701	3.405	1.447	2.663	2.190	2.551	2.267	1.309	1.427	3.172	1.046	2.226	2.254	0.81	1.72	1.019	0.697	0.614	0.354	0.62	0.433	0.723	0.386
ROTATION	177.036°		179.873°		16.699°		17.99°		7.911°		174.709°		20.973°		43.178°		136.592°		176.51°		136.629°		169.258°	
RADIUS	2.761		3.699		3.447		3.413		1.936		3.34		3.168		1.902		1.235		0.709		0.756		0.819	
CICULARITY	0.782		0.425		0.822		0.889		0.918		0.33		0.988		0.471		0.683		0.577		0.698		0.533	

TABLE 4: CENTRO DATA: FOUR QUARTERS : % PROFESSIONAL (1)

CENTROIDS	9.955	5.739	15.364	5.602	17.565	12.186	11.017	11.617	10.643	6.472	15.792	6.61	18.555	11.114	11.602	11.510	11.913	7.369	12.806	7.77	12.948	8.151	12.01	8.33
S.D.	1.801	1.135	2.739	1.779	4.027	1.358	2.305	0.938	1.212	0.907	3.138	0.708	3.6	2.808	0.998	2.103	0.44	0.535	0.473	0.176	0.345	0.91	0.353	0.553
ROTATION	158.140°		8.583°		4.214°		53.286°		171.174°		175.545°		18.472°		83.262°		79.075°		168.869°		155.182°		128.085°	
RADIUS	2.129		3.266		4.25		2.489		1.514		3.217		4.566		2.421		0.693		0.505		0.394		0.657	
CIRCULARITY	0.631		0.65		0.337		0.407		0.748		0.226		0.78		0.501		0.823		0.372		0.555		0.639	

(1) Estimate

C
C C
C C
B C C C
A A A C C
A A B B C
C C C

B

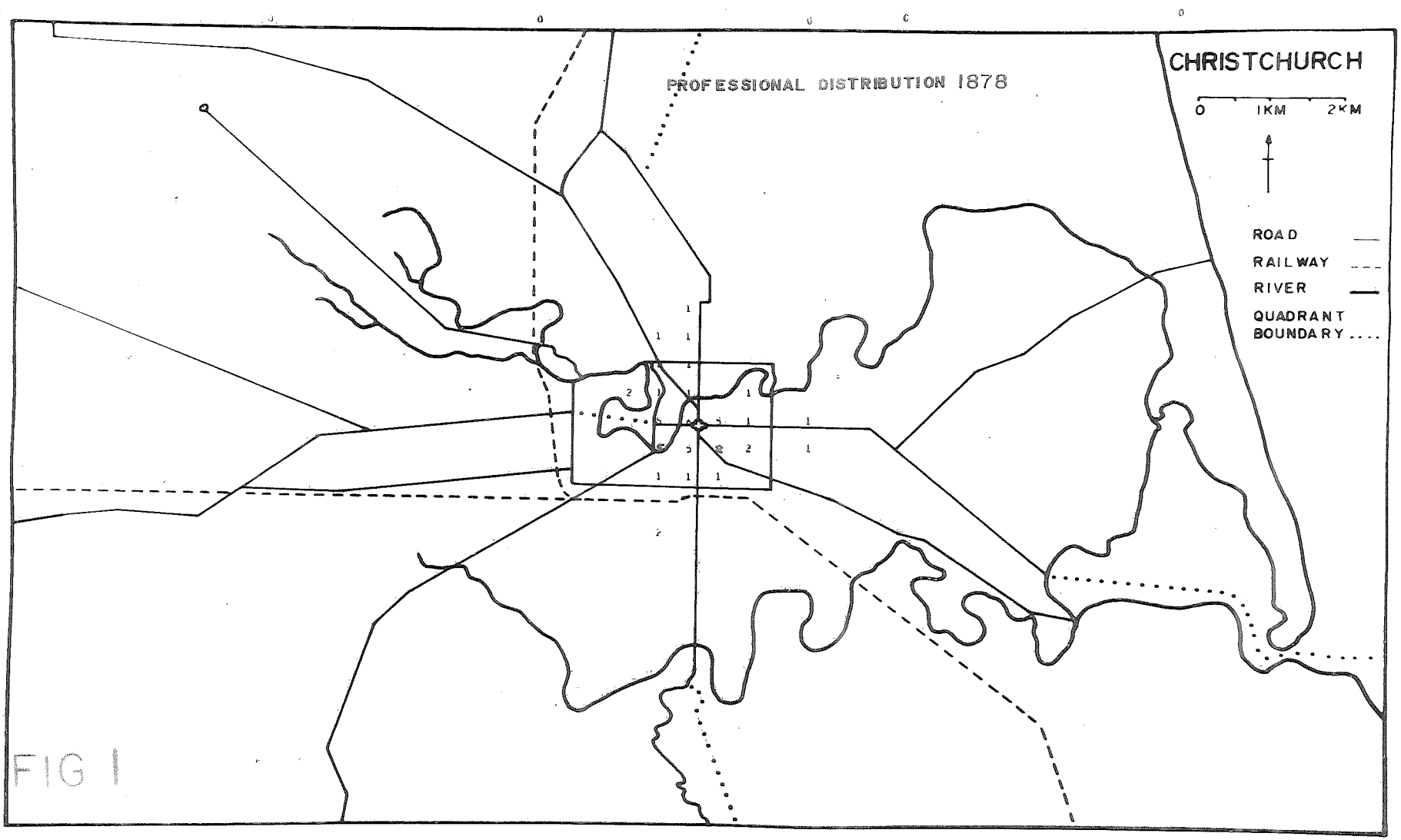
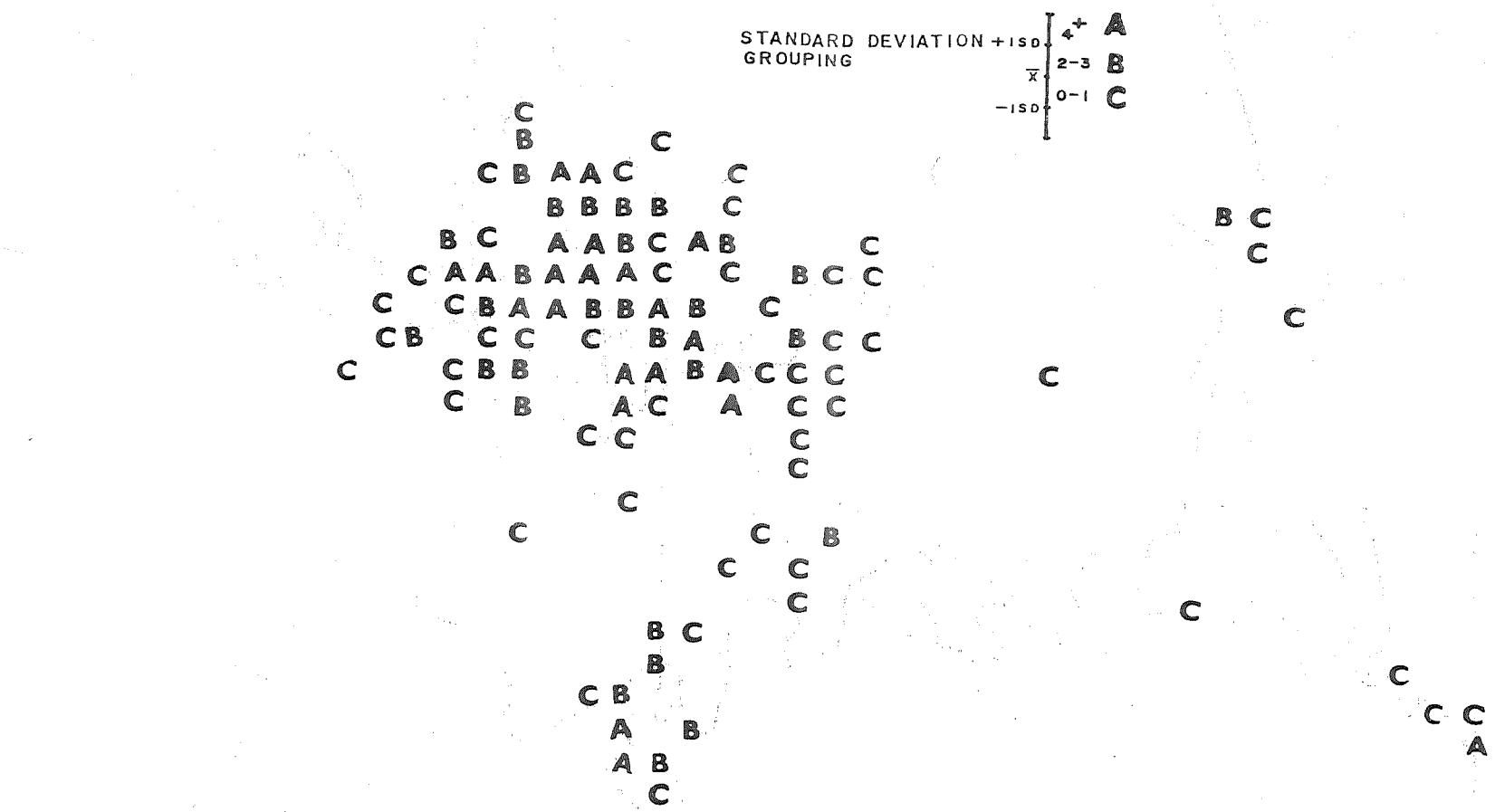

CHRISTCHURCH
PROFESSIONAL DISTRIBUTION 1878
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 1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+1SD
$\bar{X}$
-1SD
4+ A
2-3 B
0-1 C

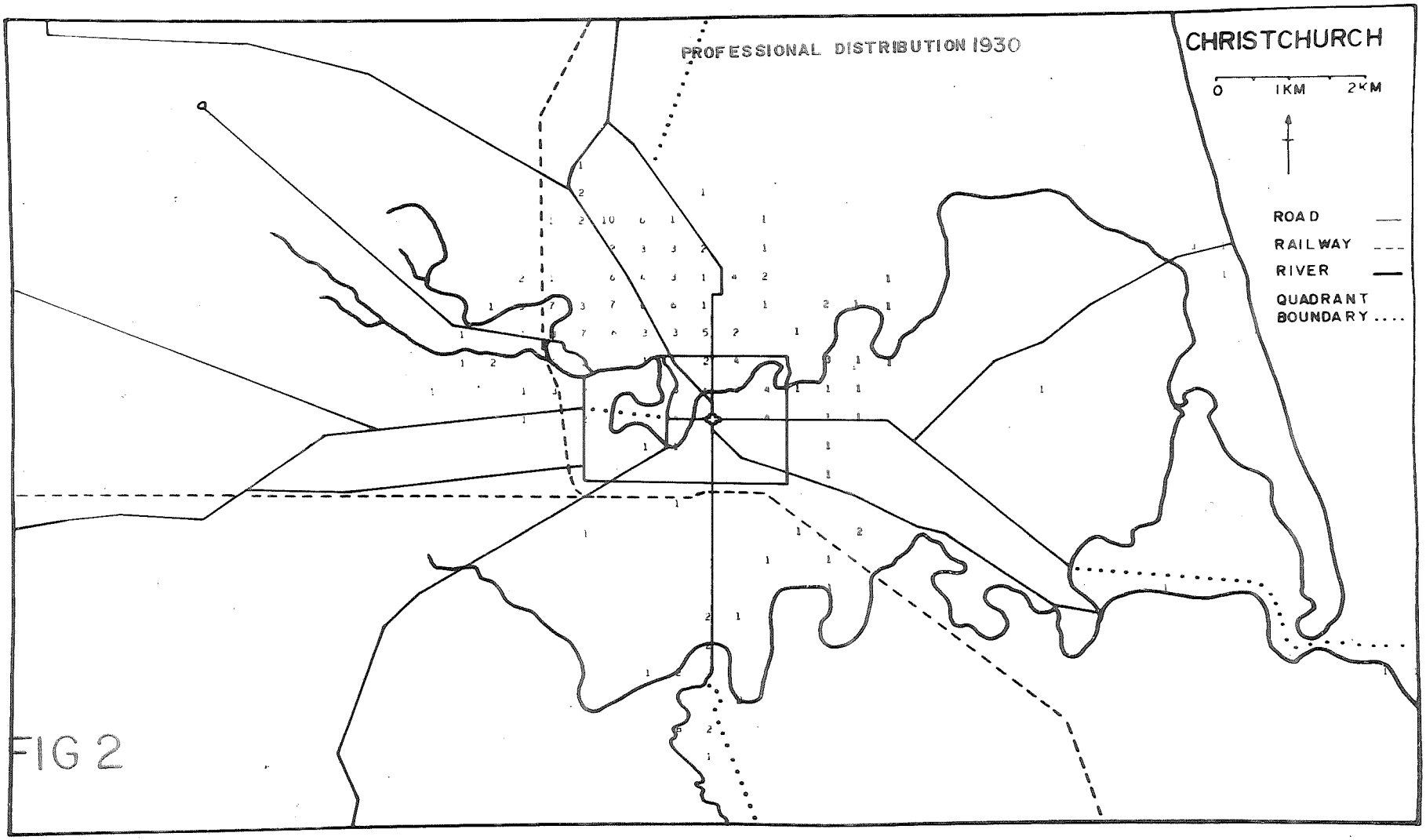
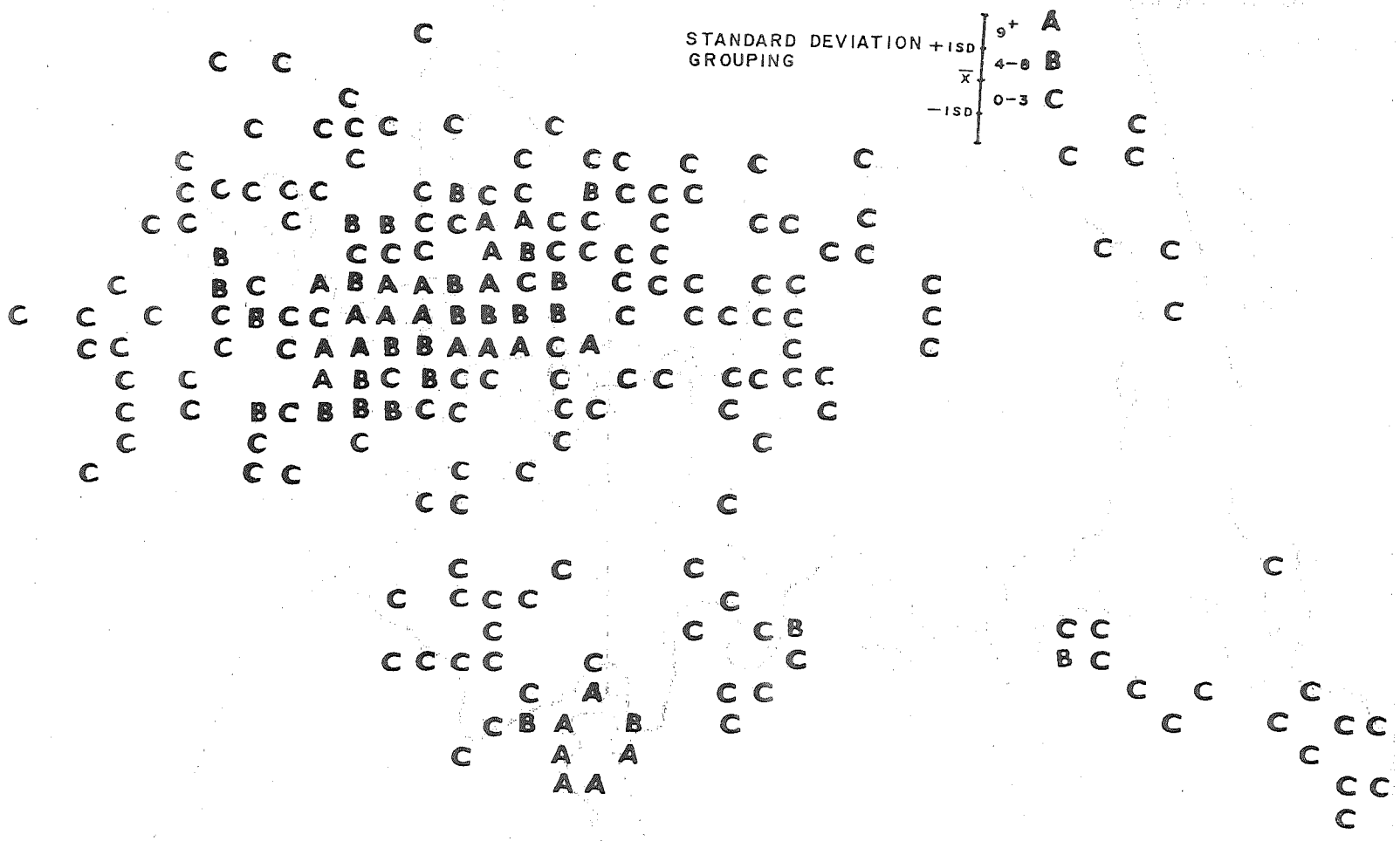

PROFESSIONAL DISTRIBUTION 1930
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 2


STANDARD DEVIATION GROUPING
+1SD
$\bar{X}$
−1SD
9+ A
4–8 B
0–3 C

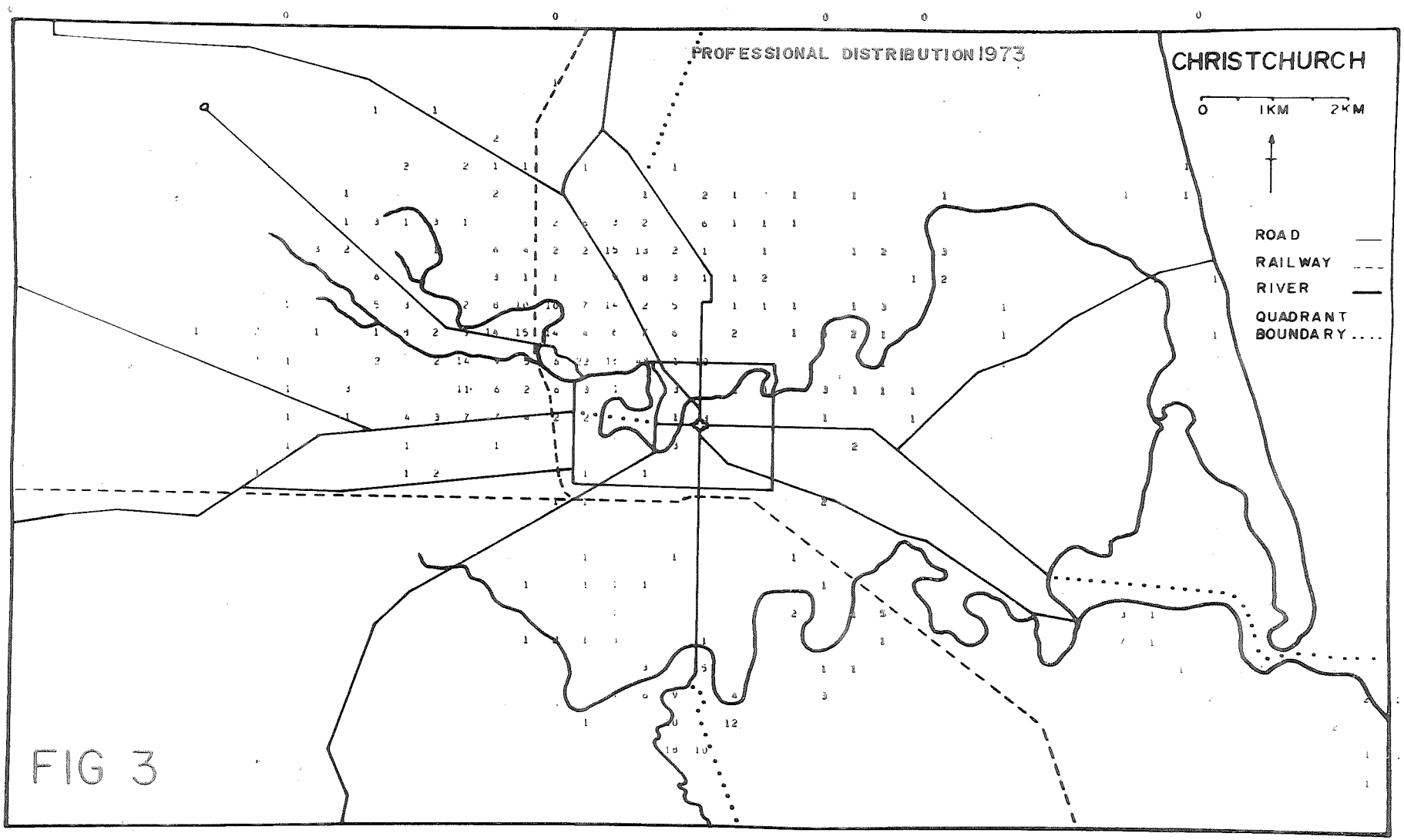

PROFESSIONAL DISTRIBUTION 1973
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 3

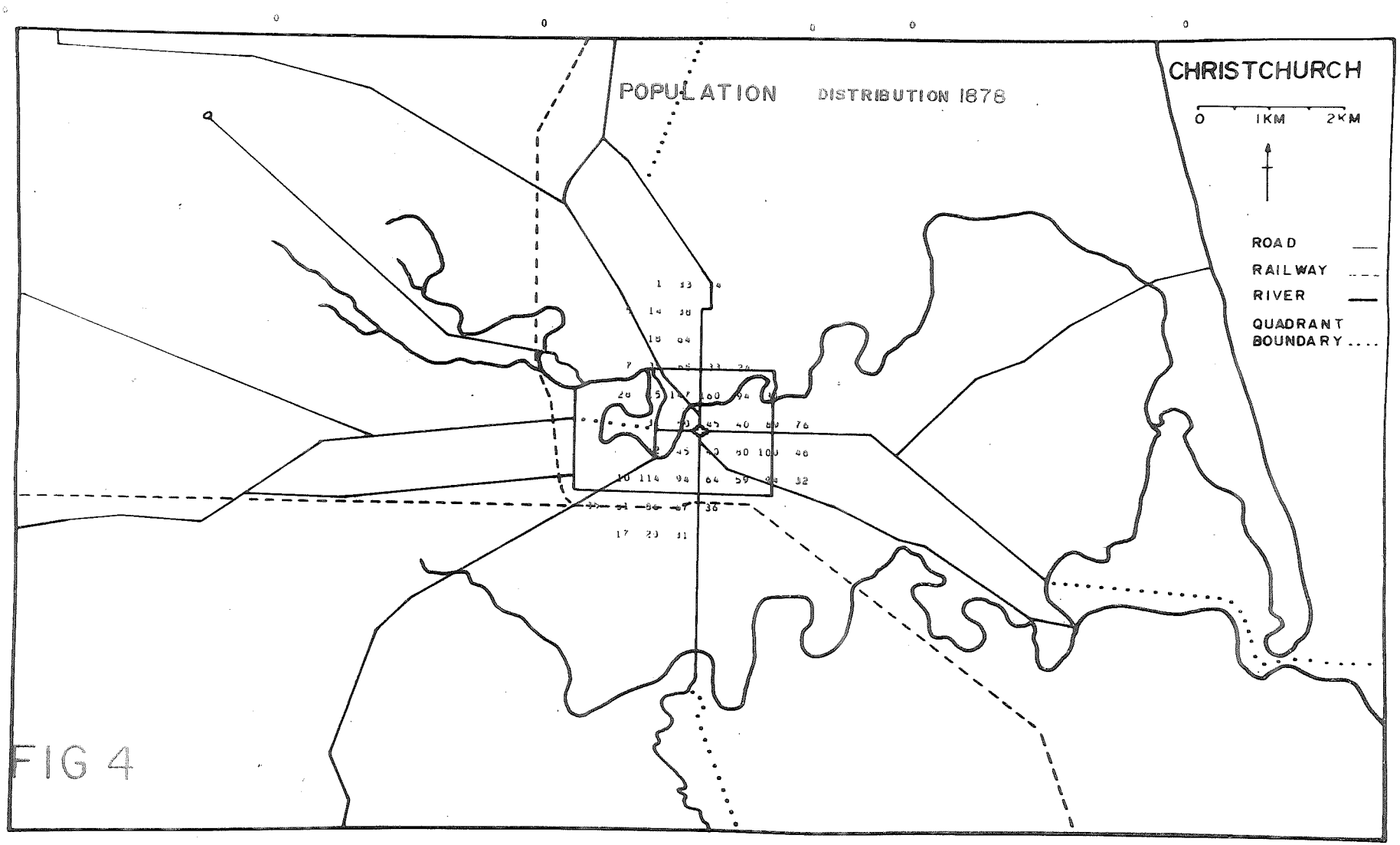
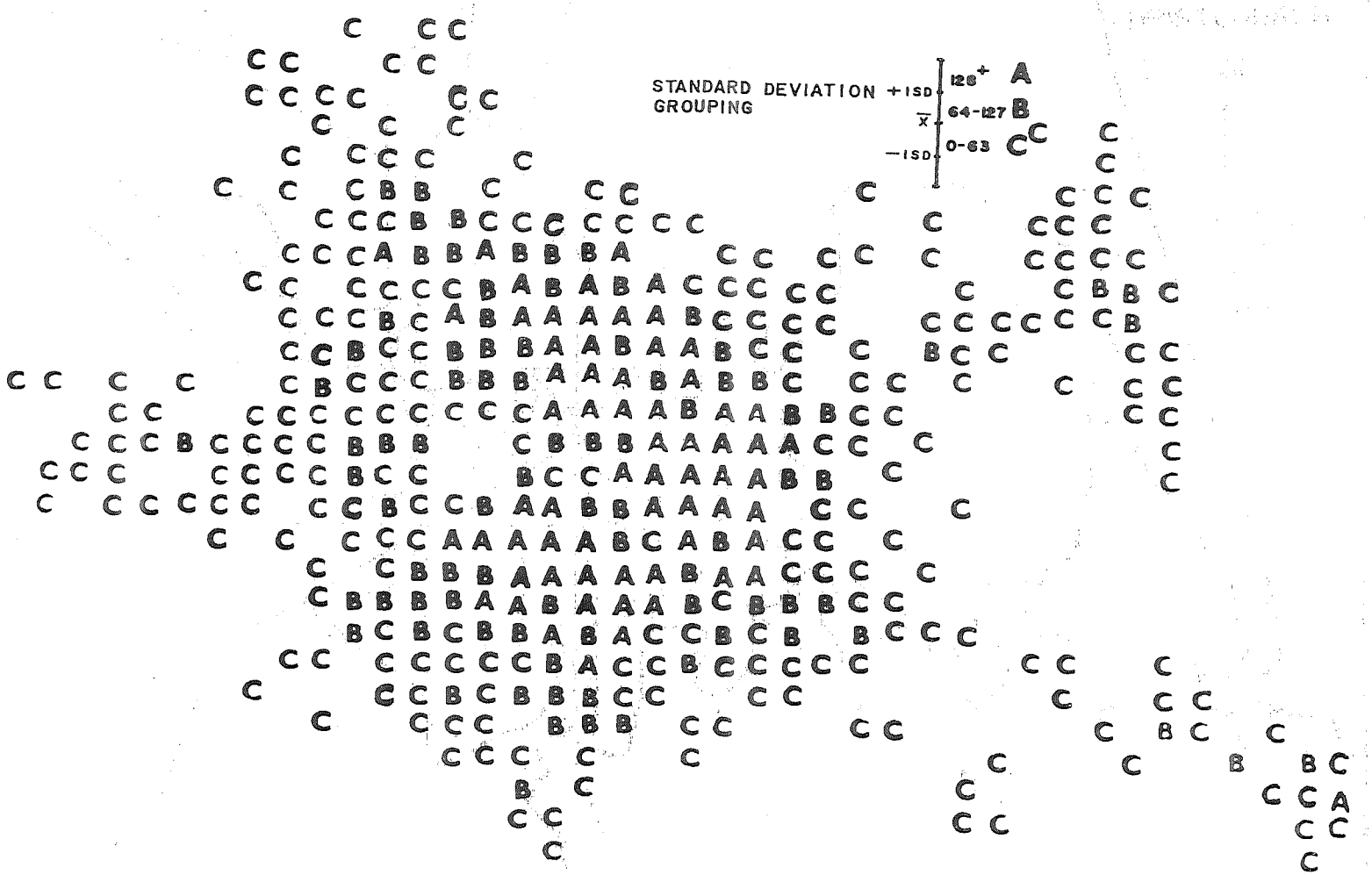

POPULATION DISTRIBUTION 1878
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 4


STANDARD DEVIATION +1SD
GROUPING
128+ A
64-127 B
X̄
0-63 C
-1SD

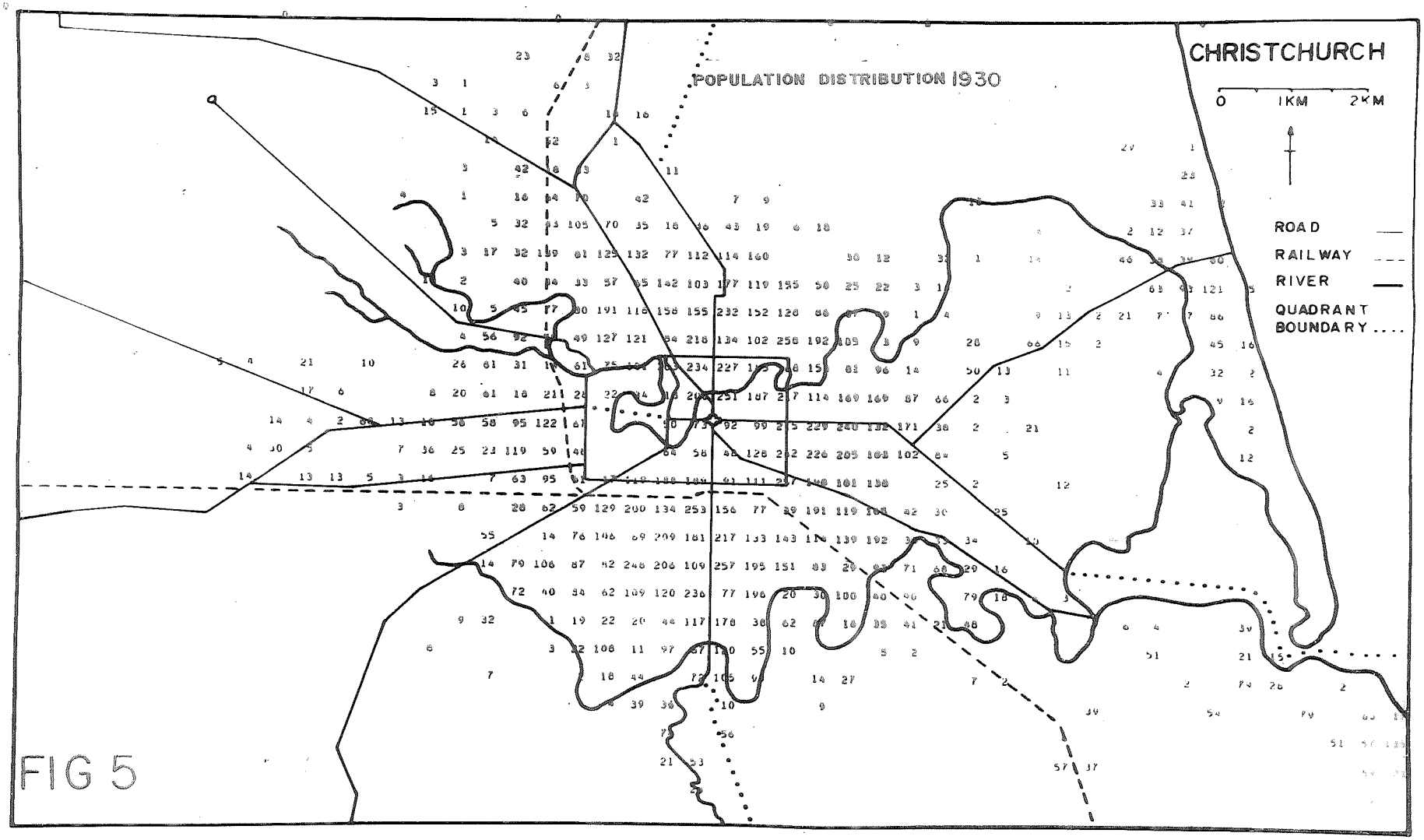
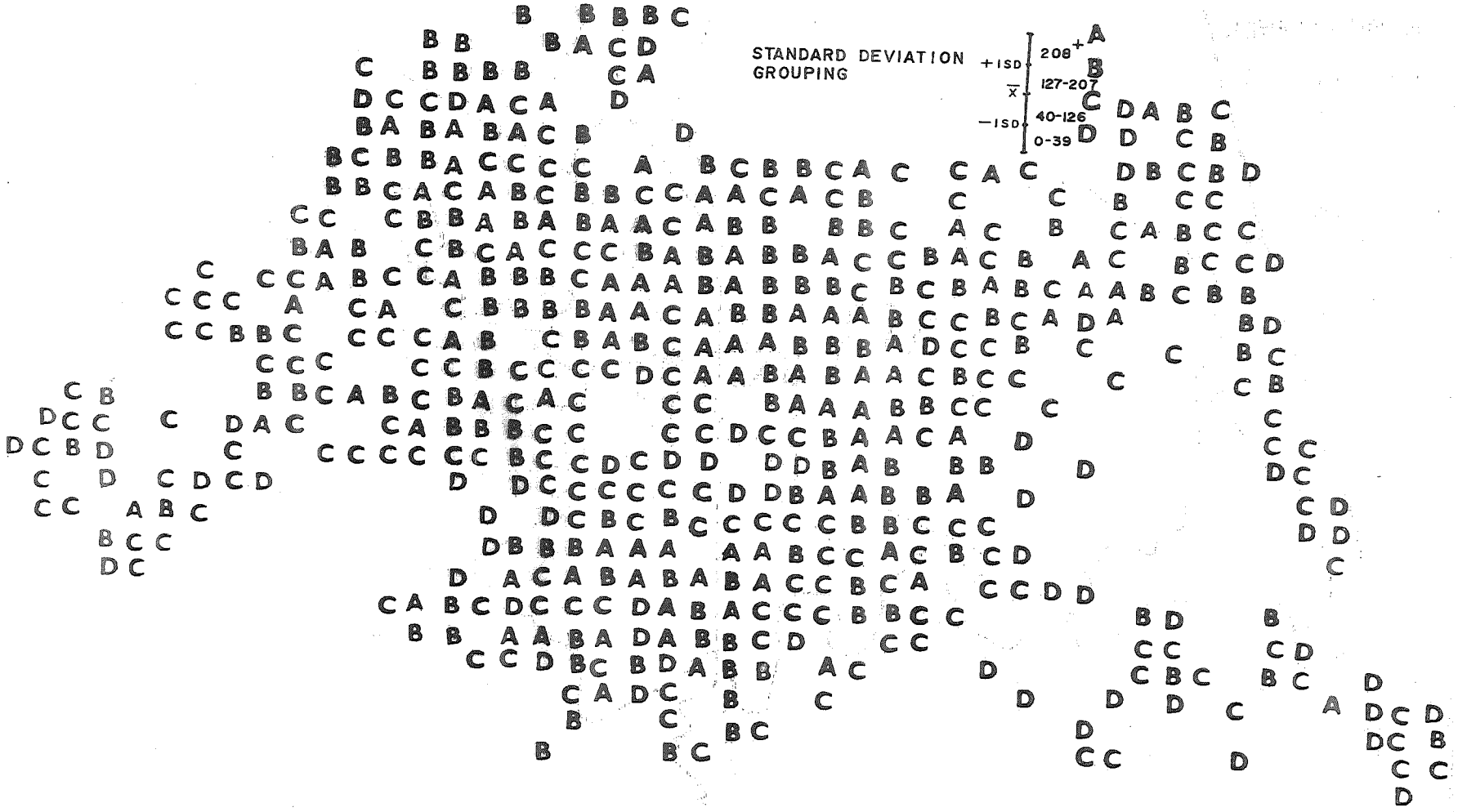

CHRISTCHURCH
POPULATION DISTRIBUTION 1930
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 5


STANDARD DEVIATION GROUPING
+1SD
$\bar{X}$
−1SD
208+
127-207
40-126
0-39

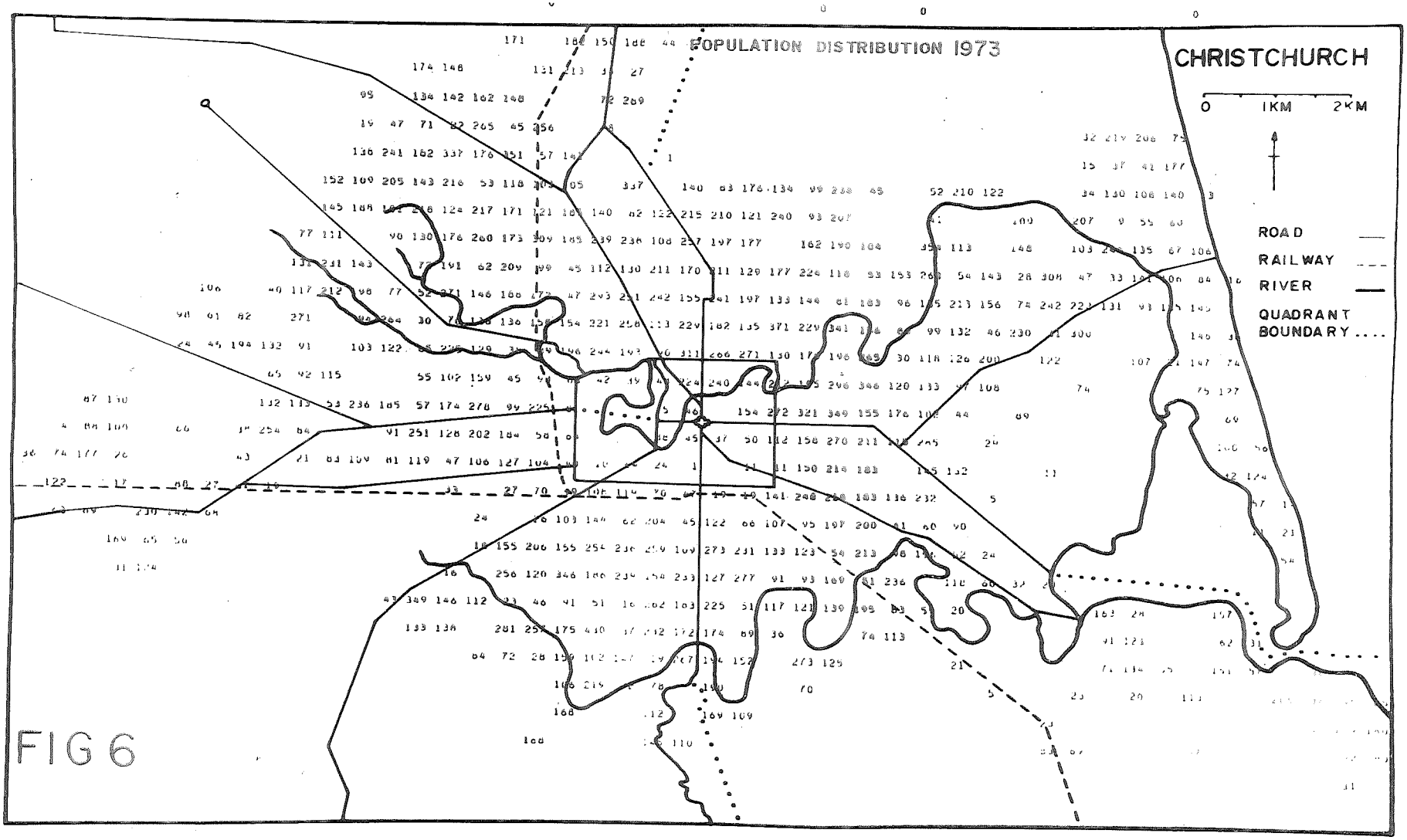
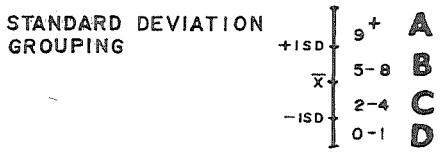
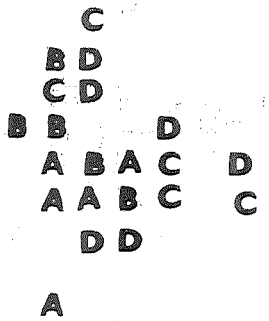

POPULATION DISTRIBUTION 1973
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 6


STANDARD DEVIATION
GROUPING
+1SD
$\bar{x}$
-1SD
9+
5-8
2-4
0-1
A
B
C
D


C
B D
C D
B B D
A B A C D
A A B C C
D D
A

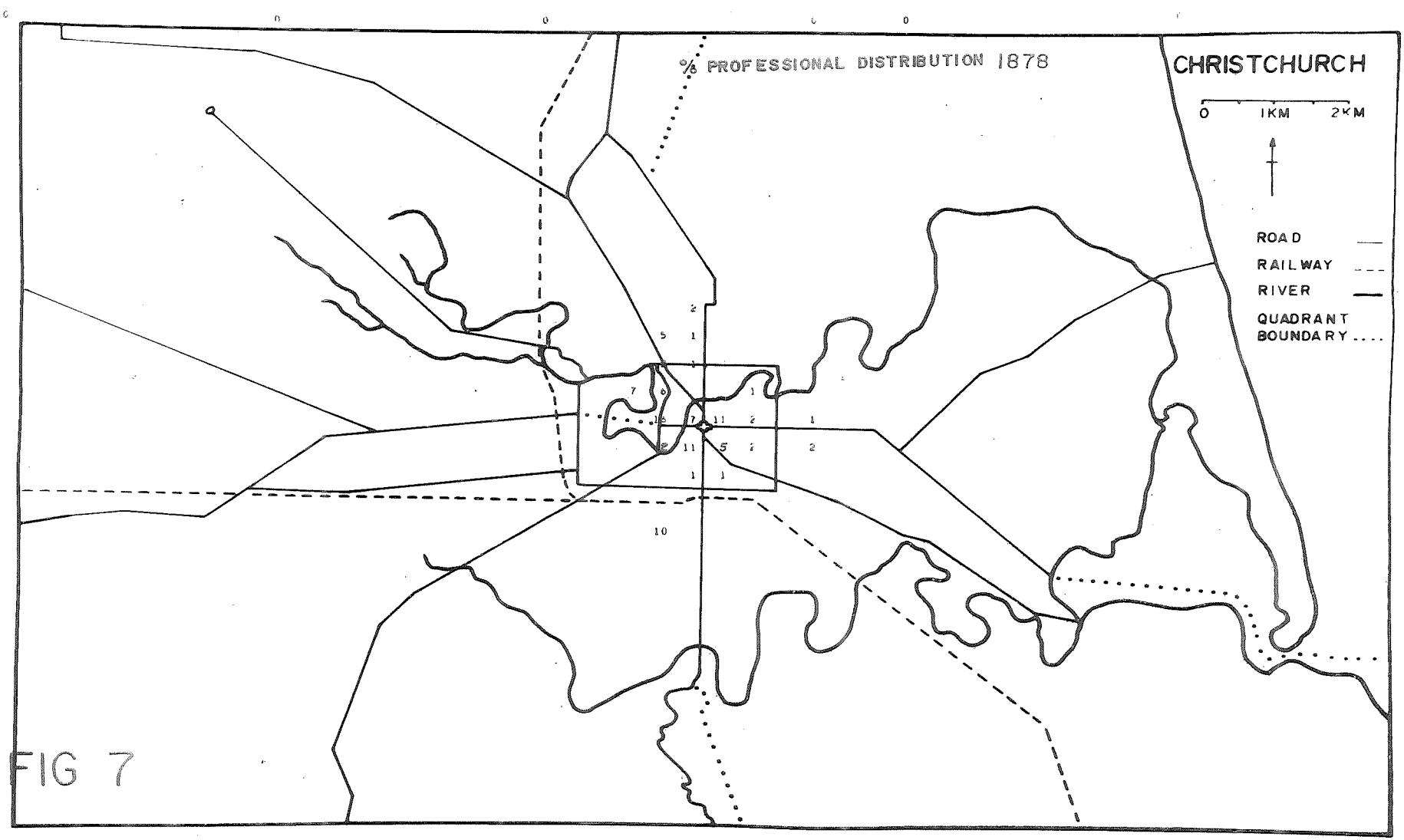
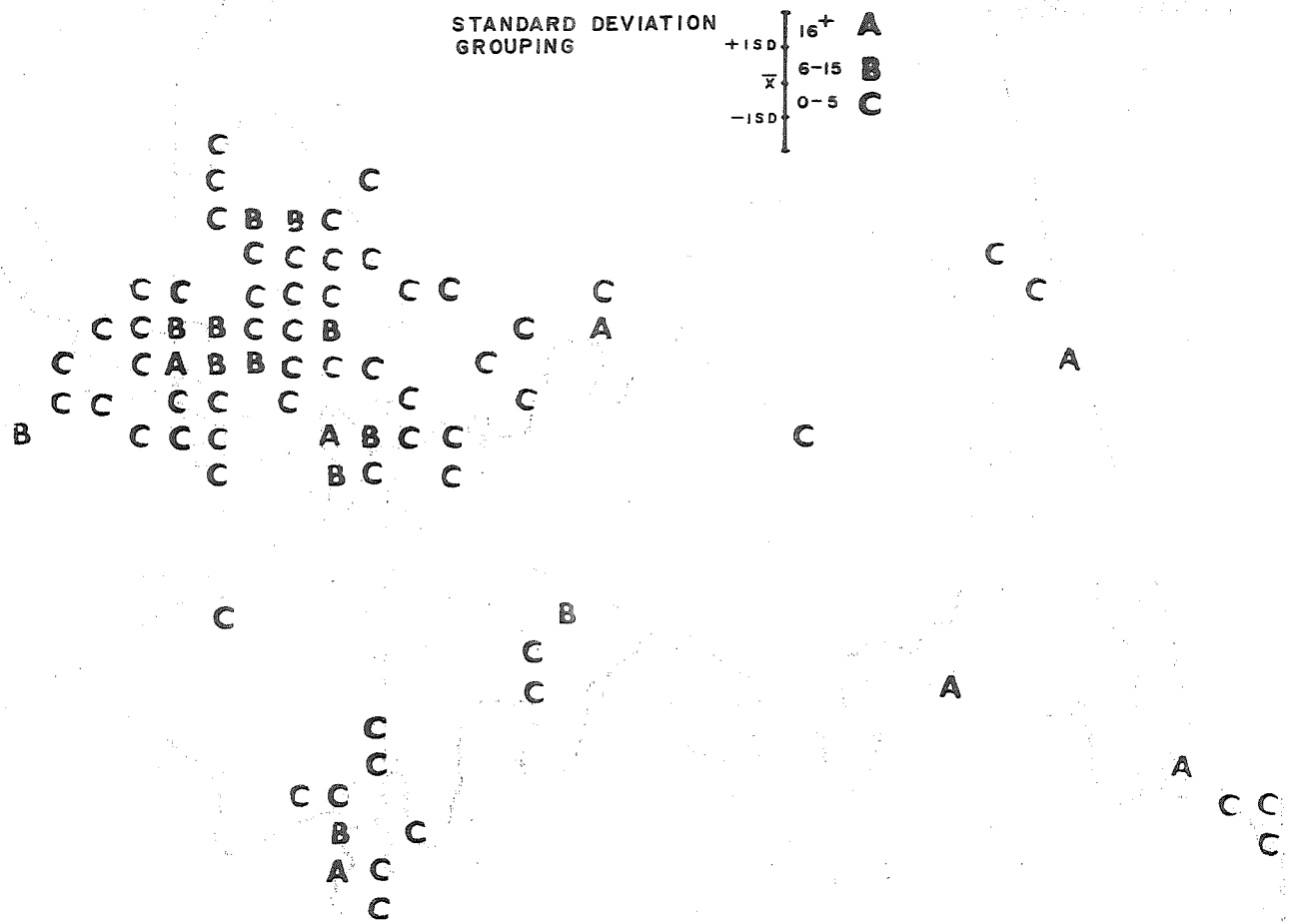

% PROFESSIONAL DISTRIBUTION 1878
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 7


STANDARD DEVIATION GROUPING
+1SD
$\bar{X}$
−1SD
16+ A
6-15 B
0-5 C

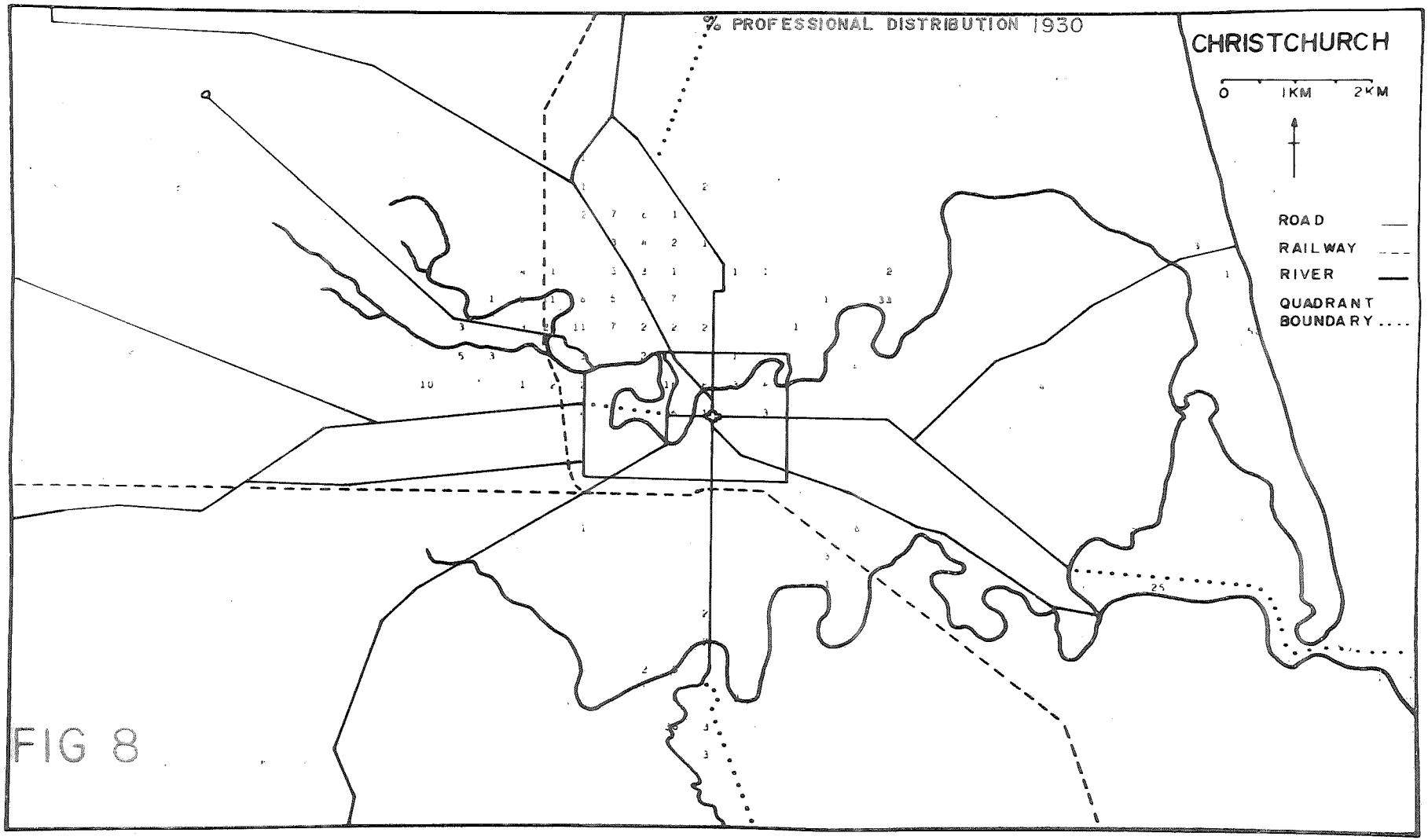
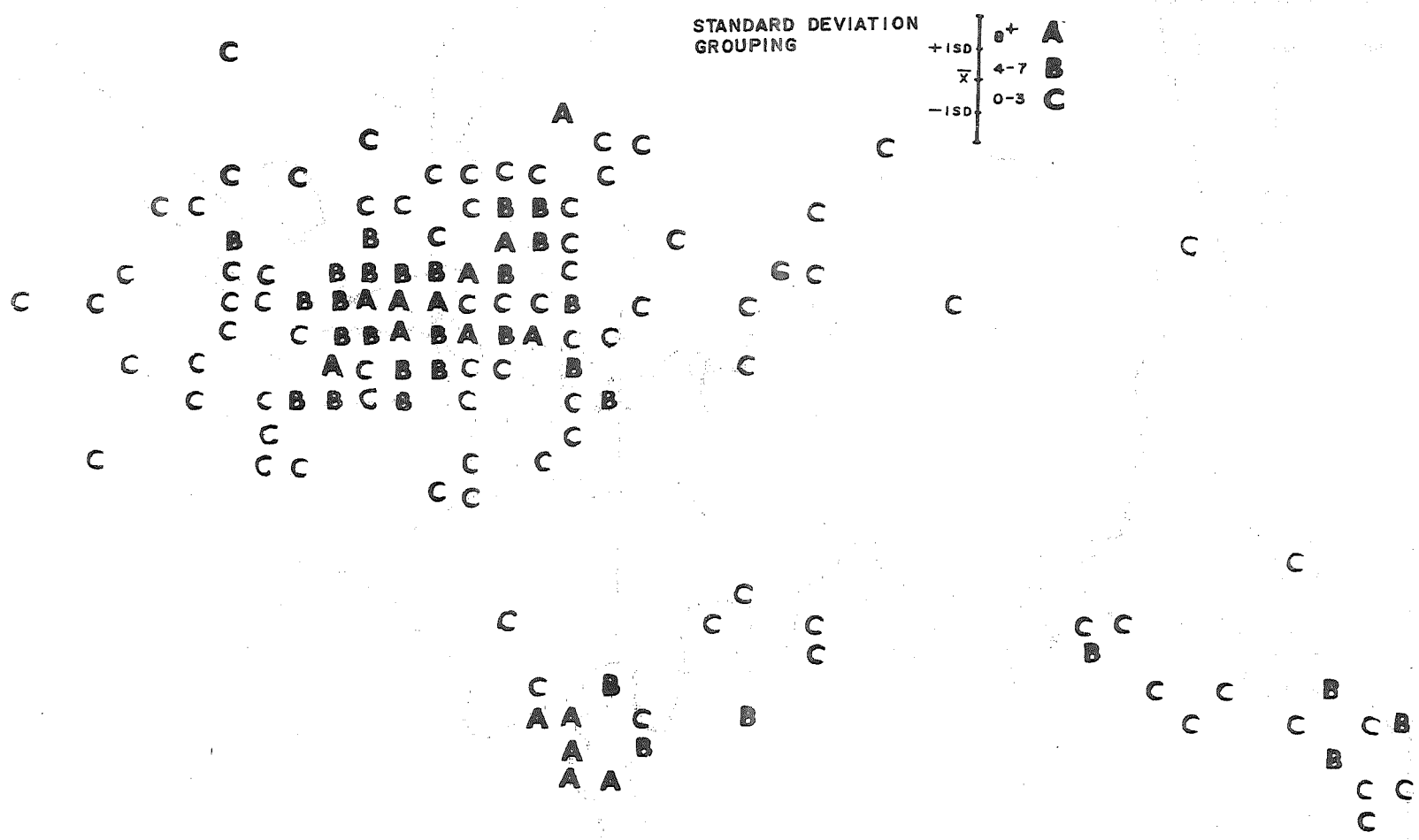

% PROFESSIONAL DISTRIBUTION 1930
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 8


STANDARD DEVIATION GROUPING
+1SD
X̄
−1SD
8+ A
4-7 B
0-3 C

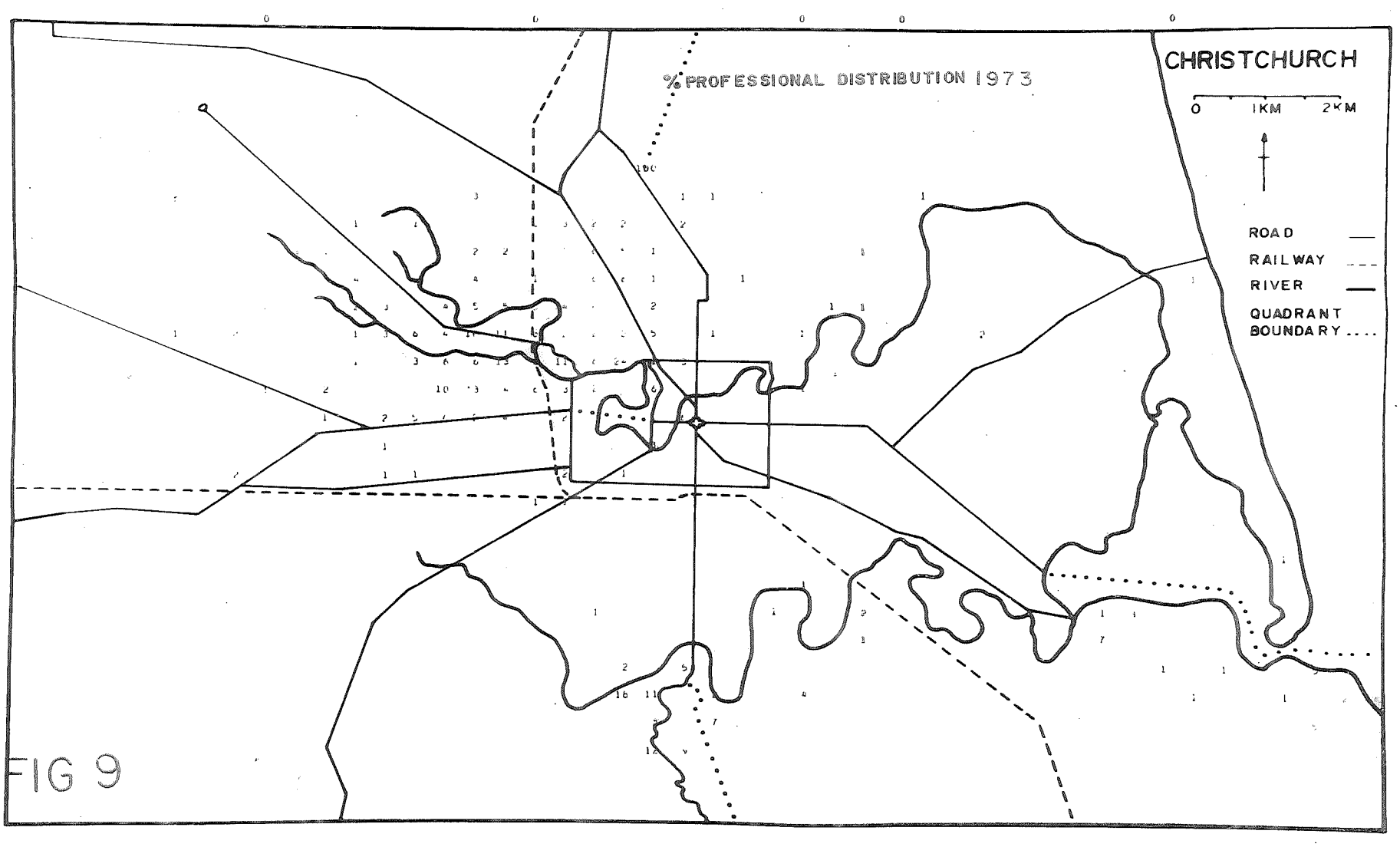
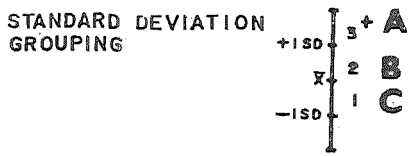
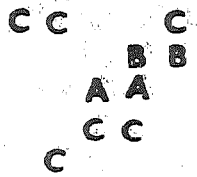

% PROFESSIONAL DISTRIBUTION 1973
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 9


STANDARD DEVIATION
GROUPING
+1 SD
X̄
−1 SD
3
2
1
A
B
C


C C
C
B B
A A
C C
C

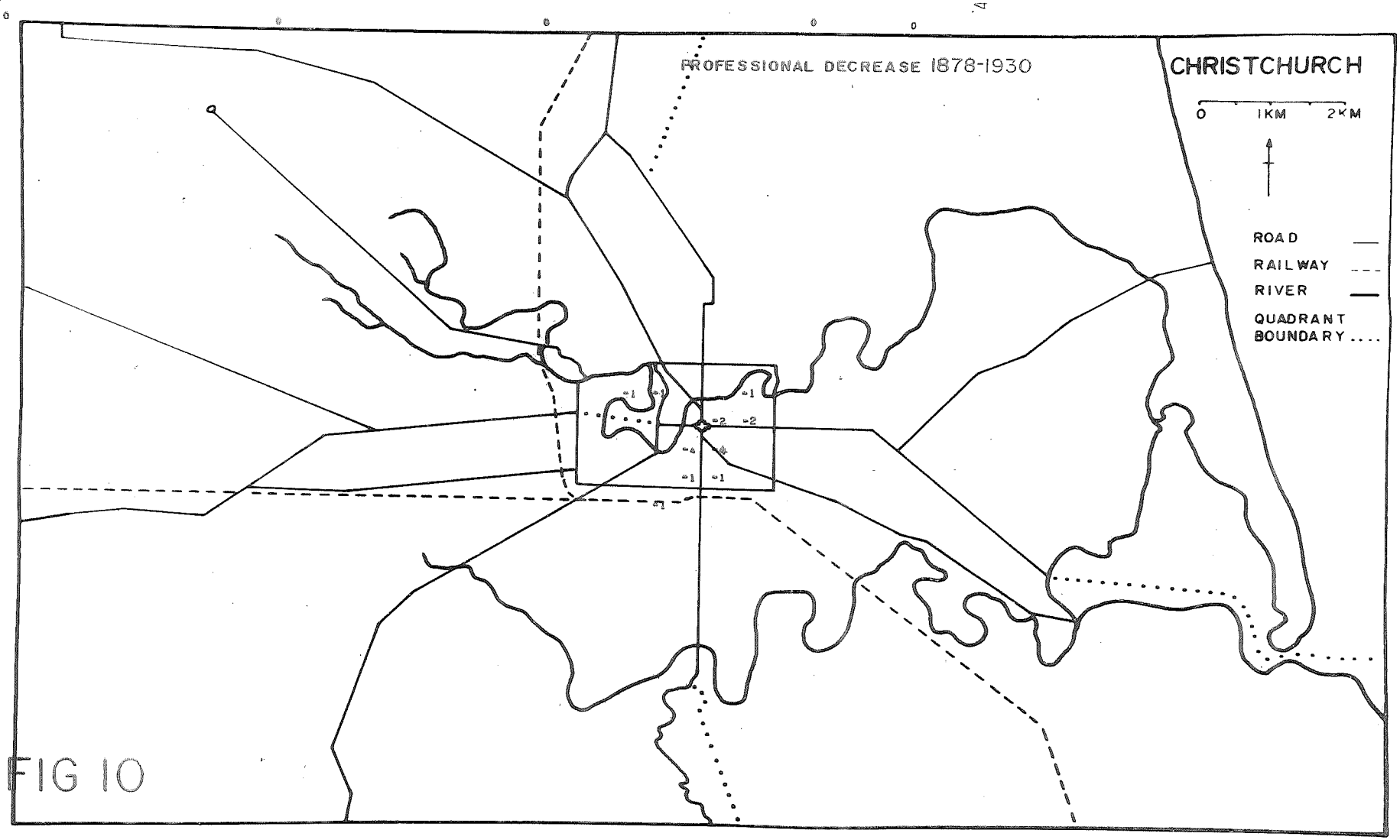
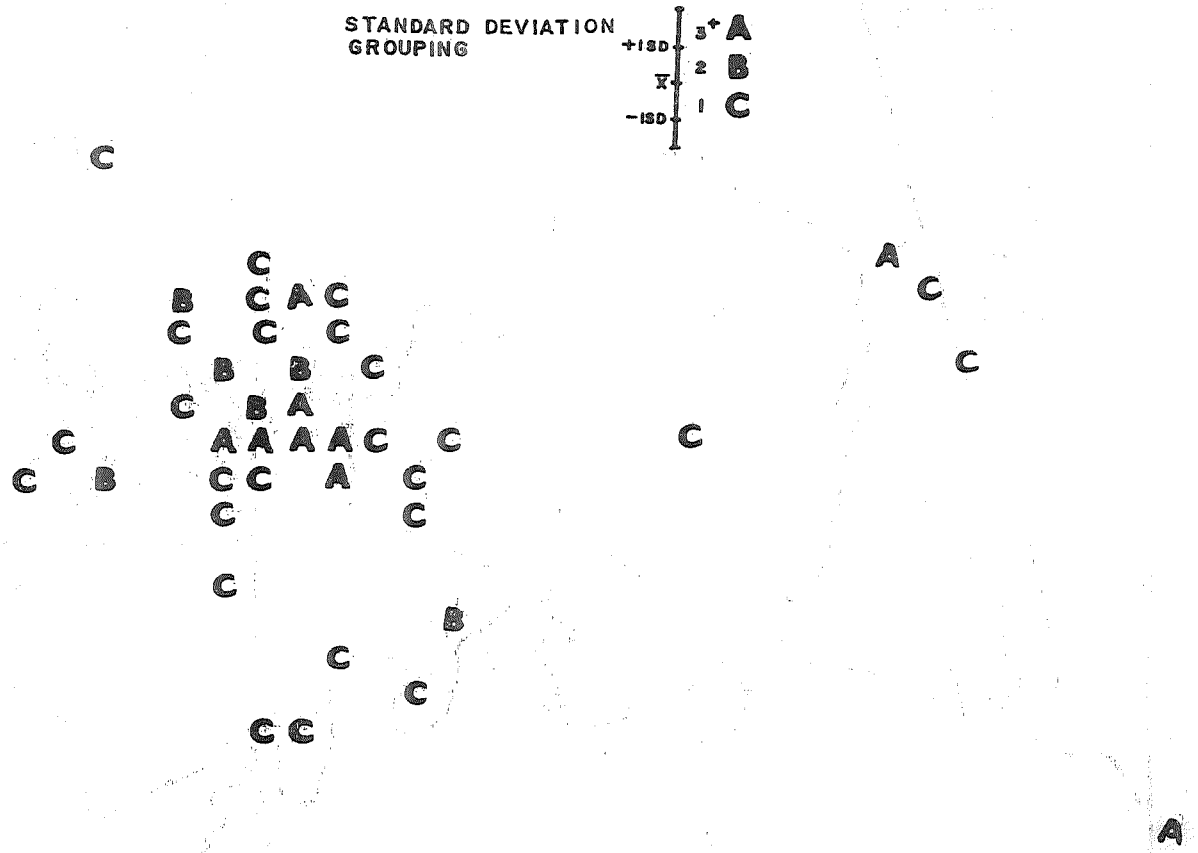

PROFESSIONAL DECREASE 1878-1930
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 10


STANDARD DEVIATION GROUPING
+1SD
X̄
-1SD
3+ A
2 B
1 C

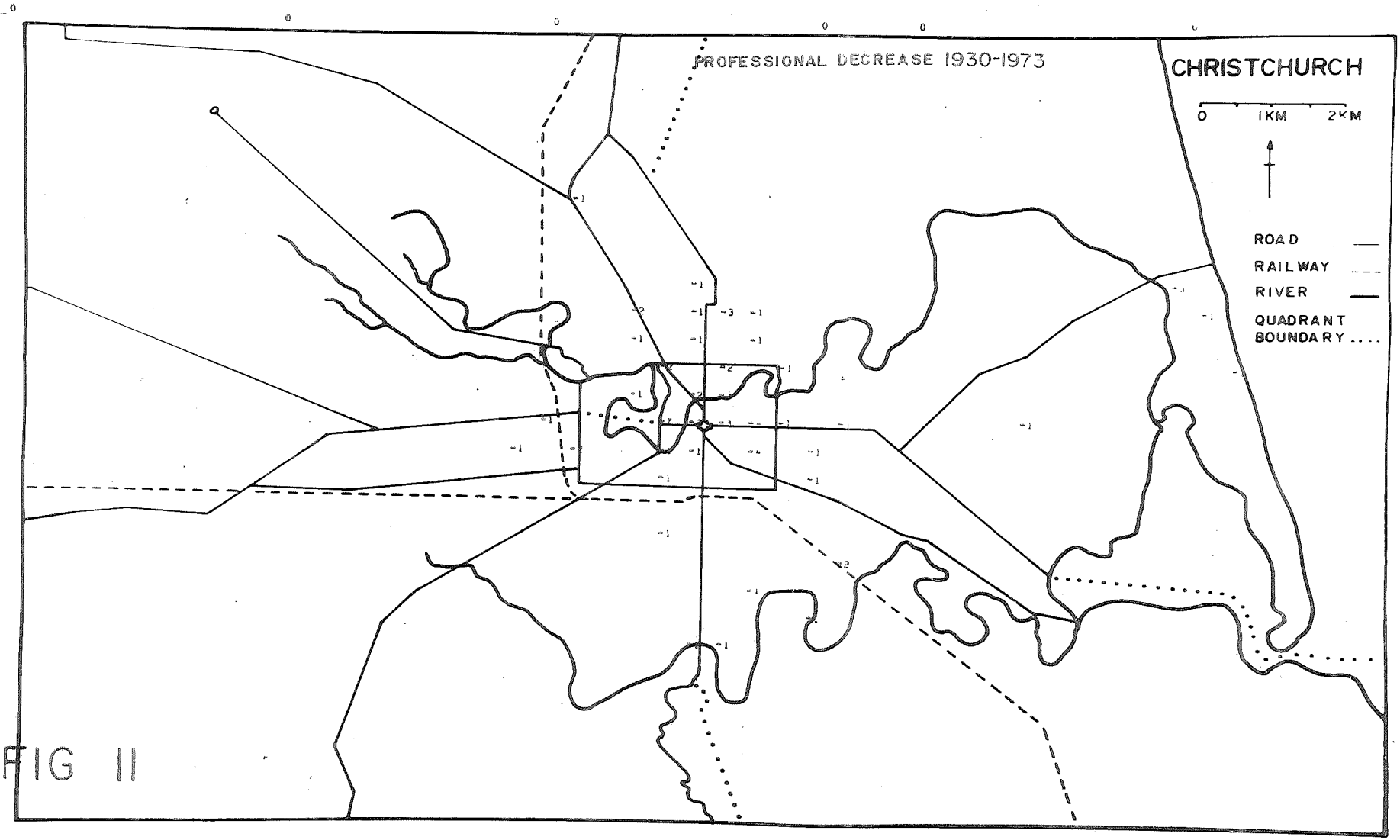
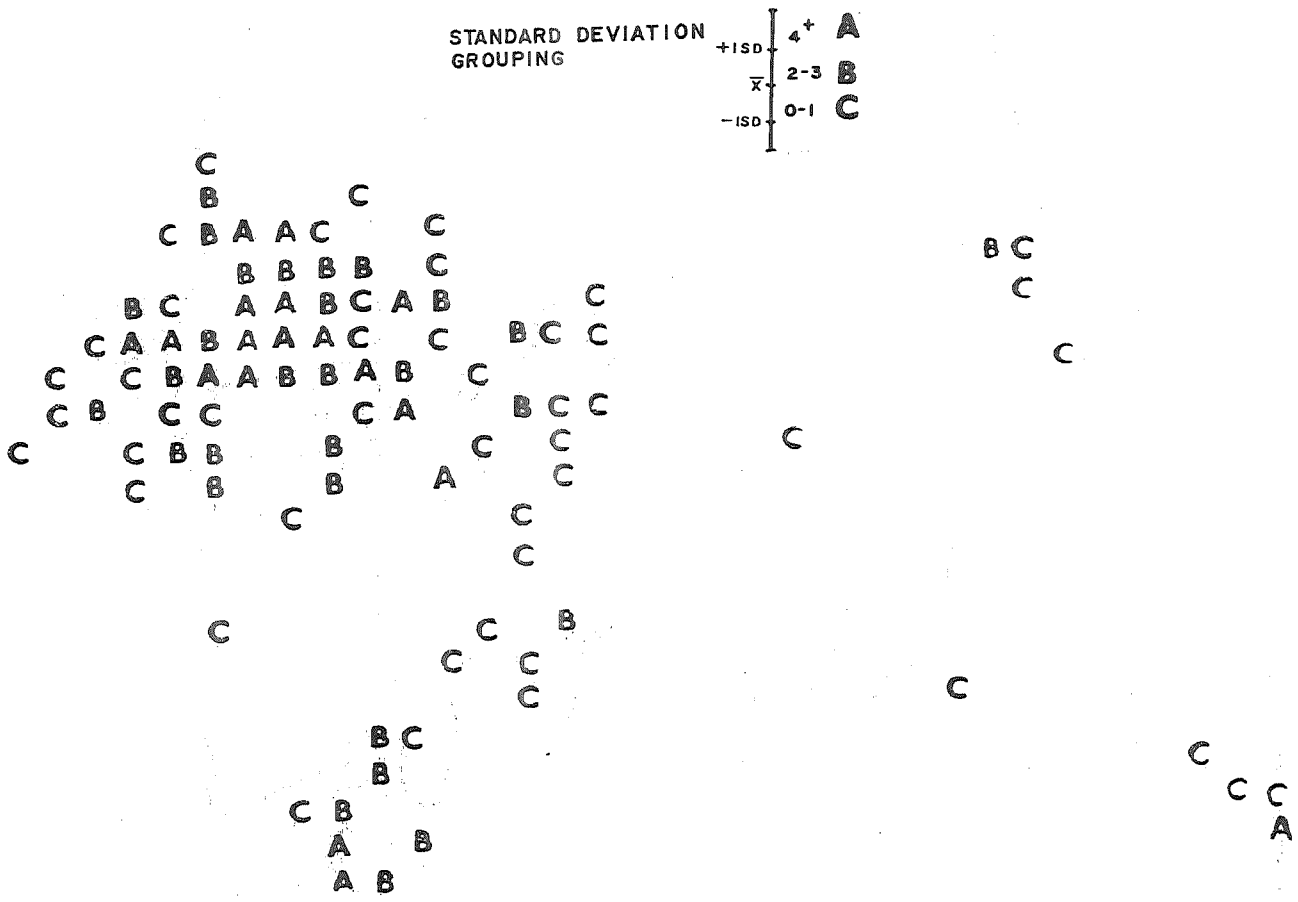

PROFESSIONAL DECREASE 1930-1973
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 11


STANDARD DEVIATION GROUPING
+1SD
$\bar{x}$
-1SD
4+ A
2-3 B
0-1 C

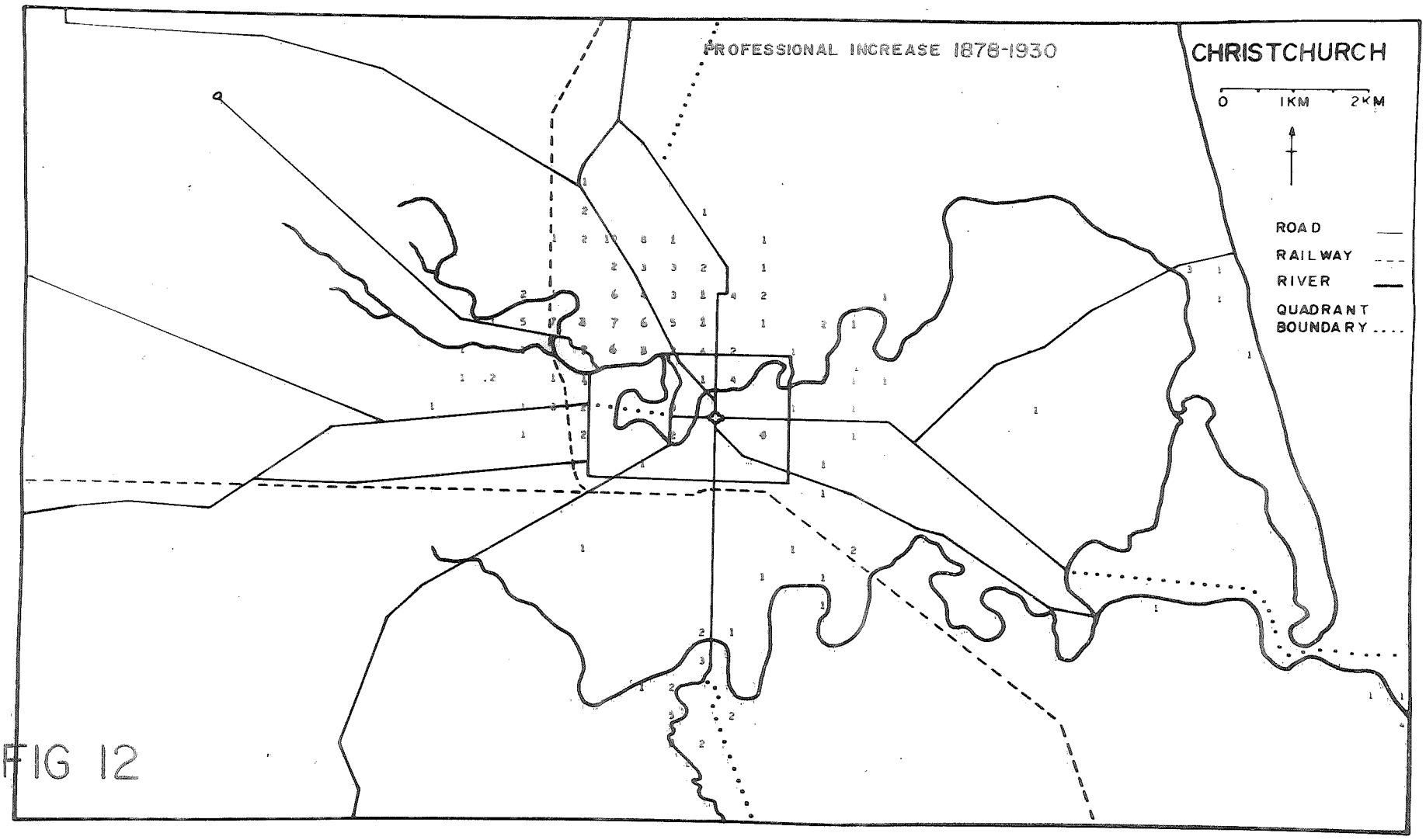
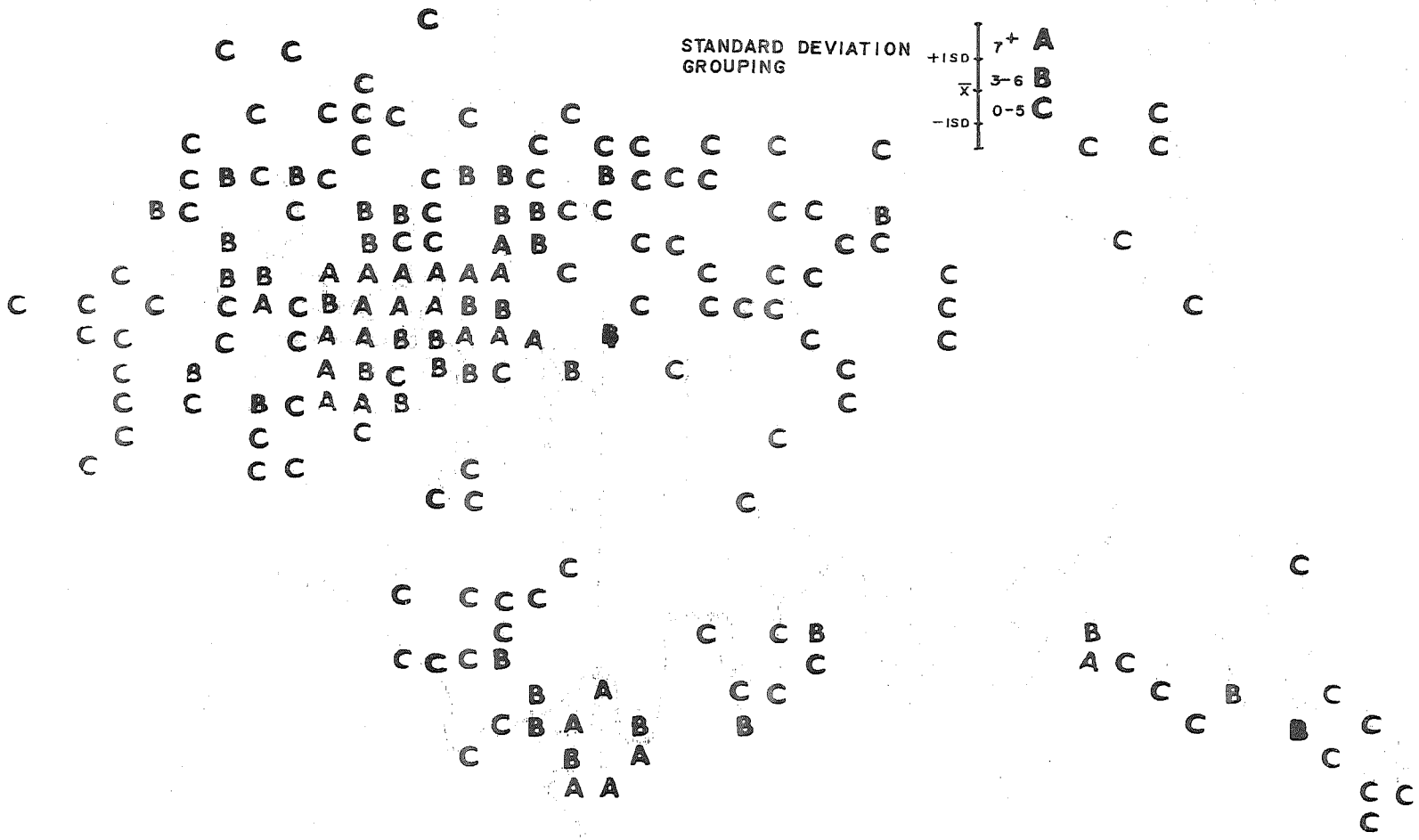

PROFESSIONAL INCREASE 1878-1930
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 12


STANDARD DEVIATION GROUPING
+1SD
X̄
-1SD
7+ A
3-6 B
0-5 C

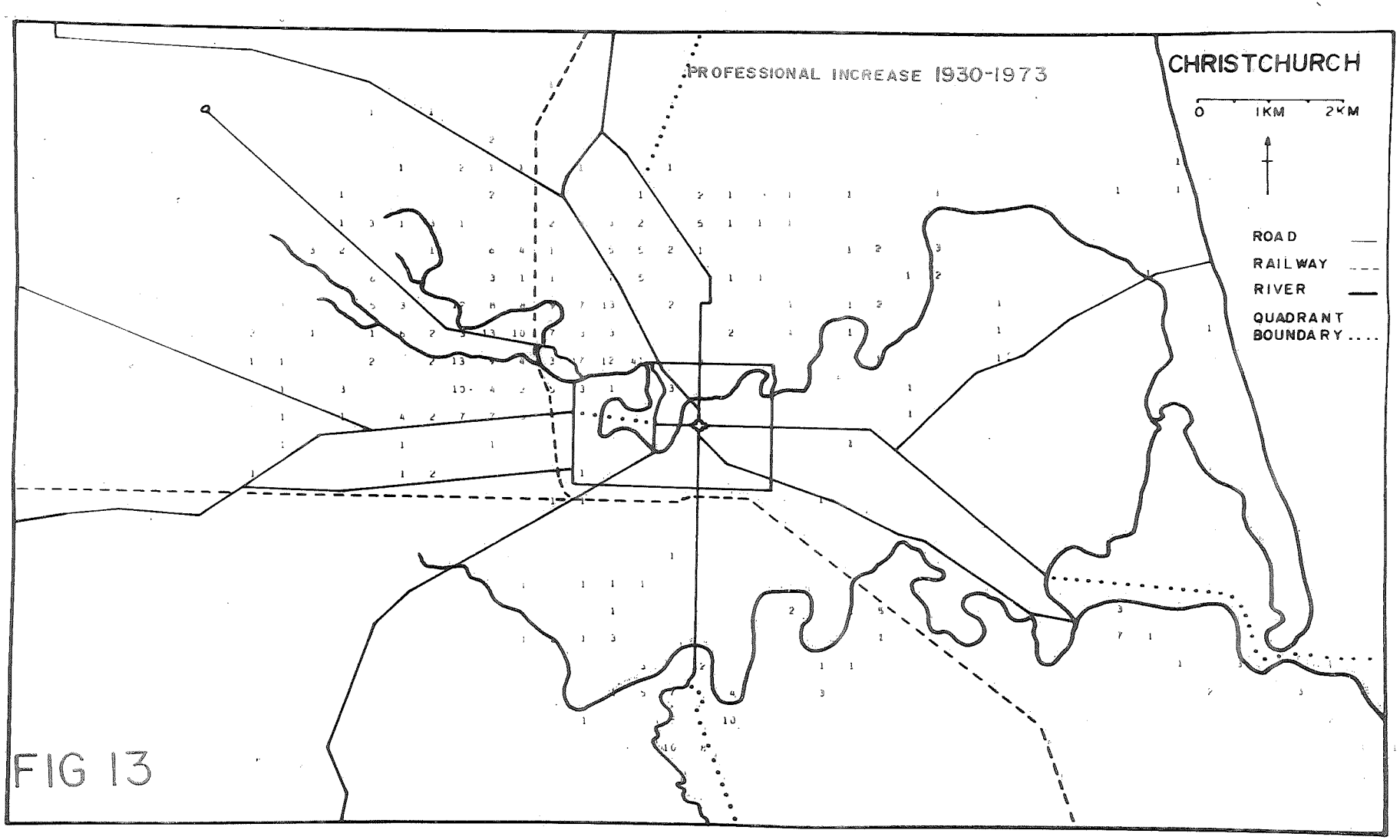

PROFESSIONAL INCREASE 1930-1973
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 13

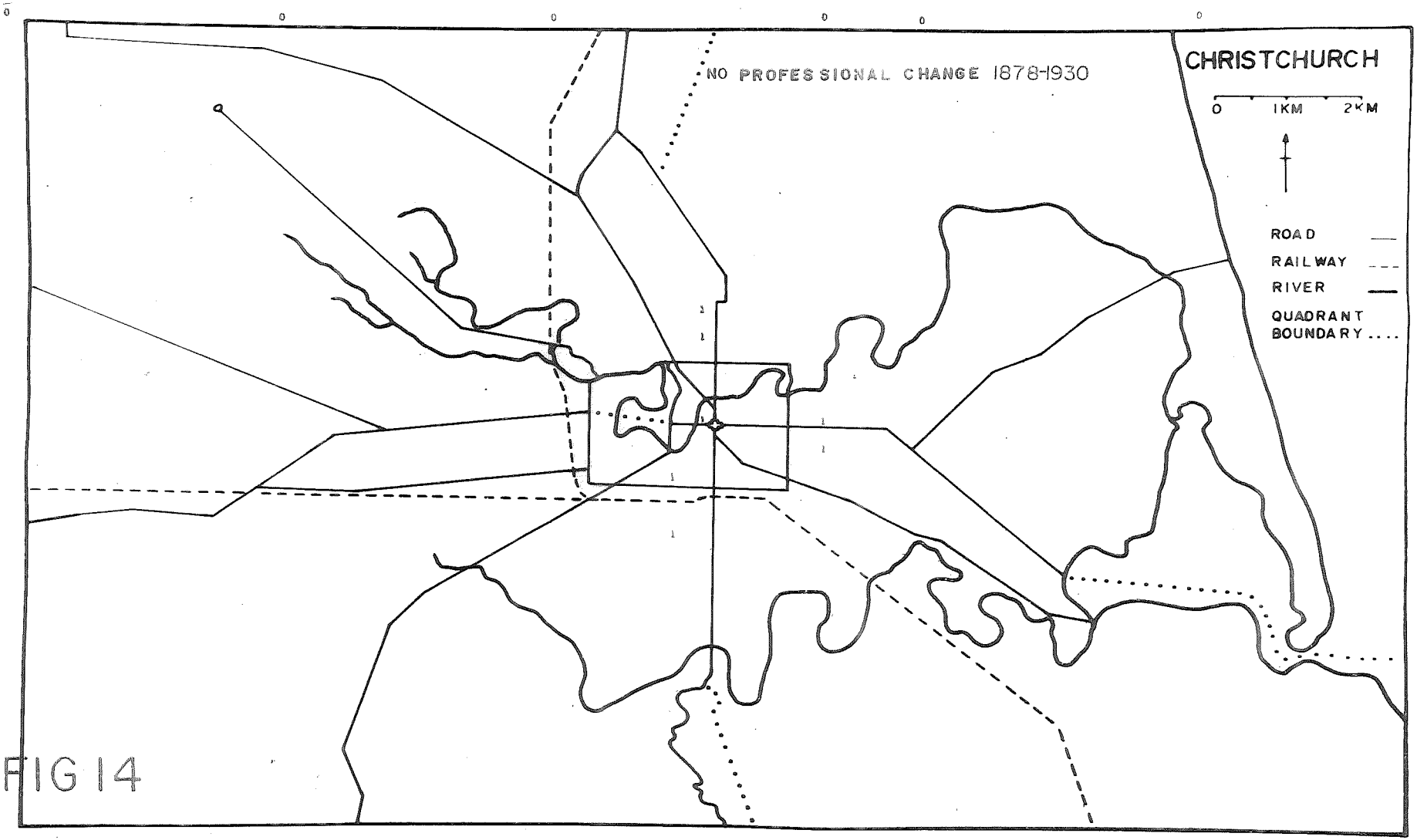

NO PROFESSIONAL CHANGE 1878-1930
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 14

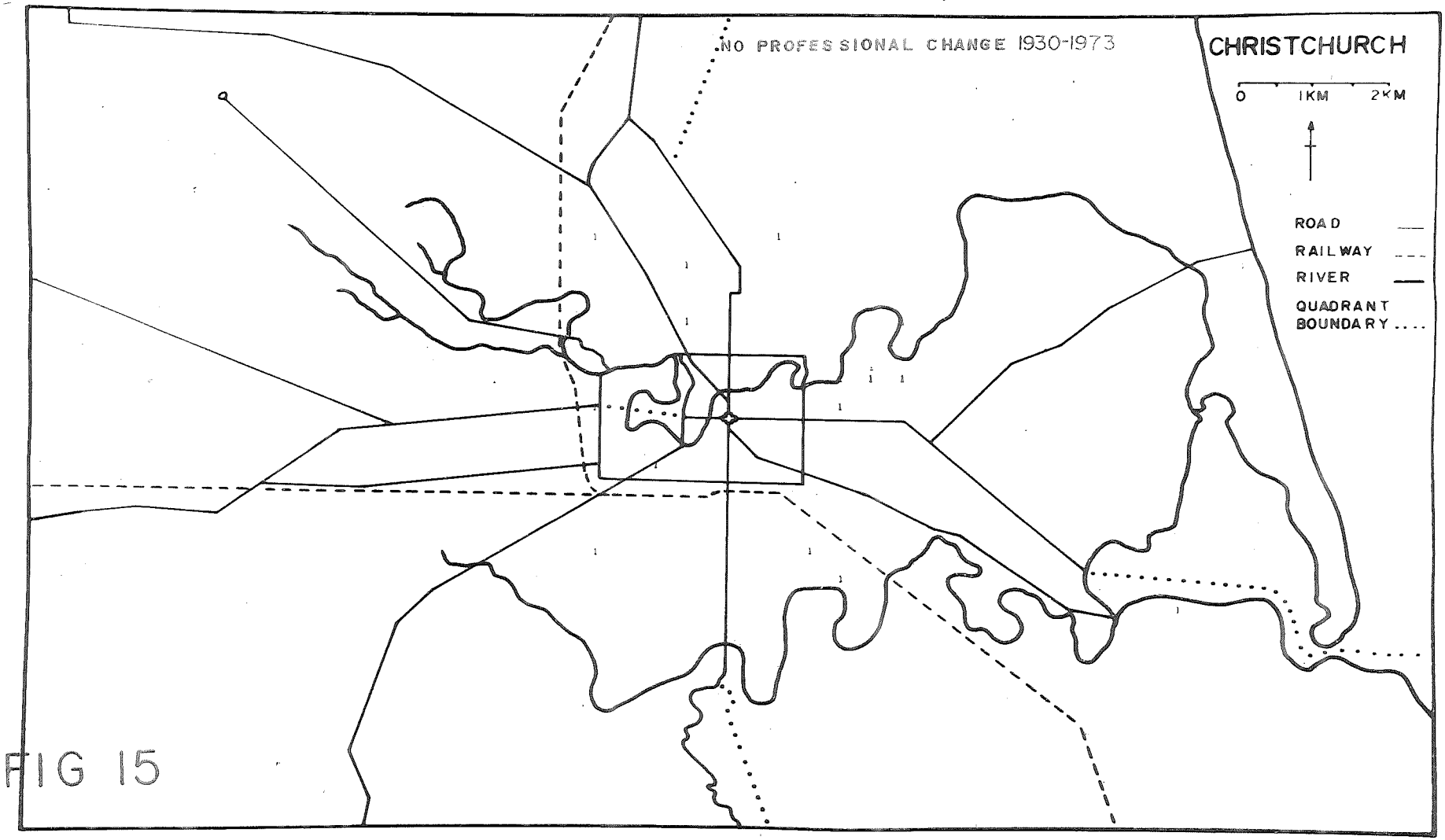
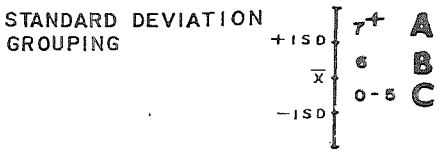

NO PROFESSIONAL CHANGE 1930-1973
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 15



A

C

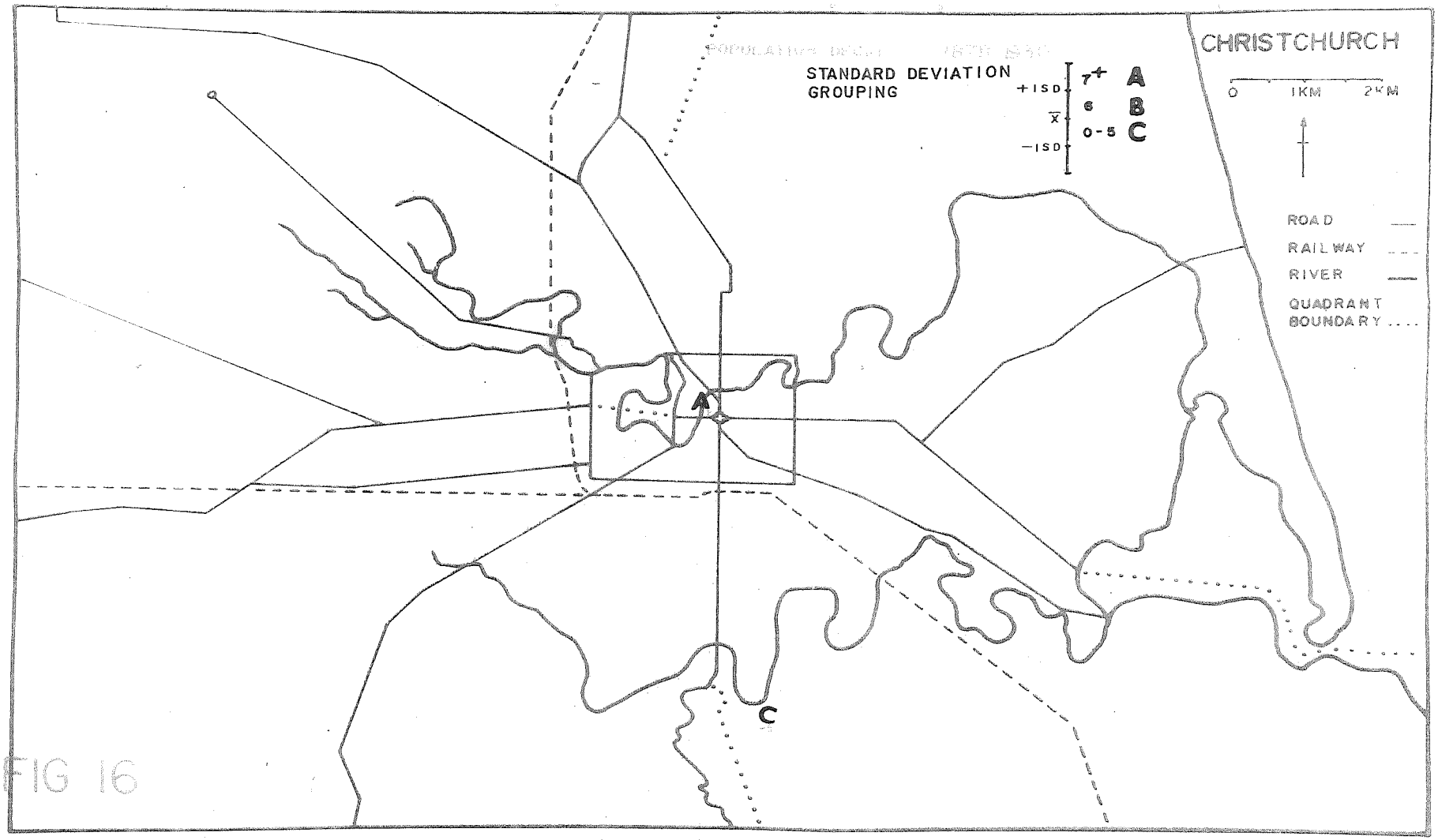
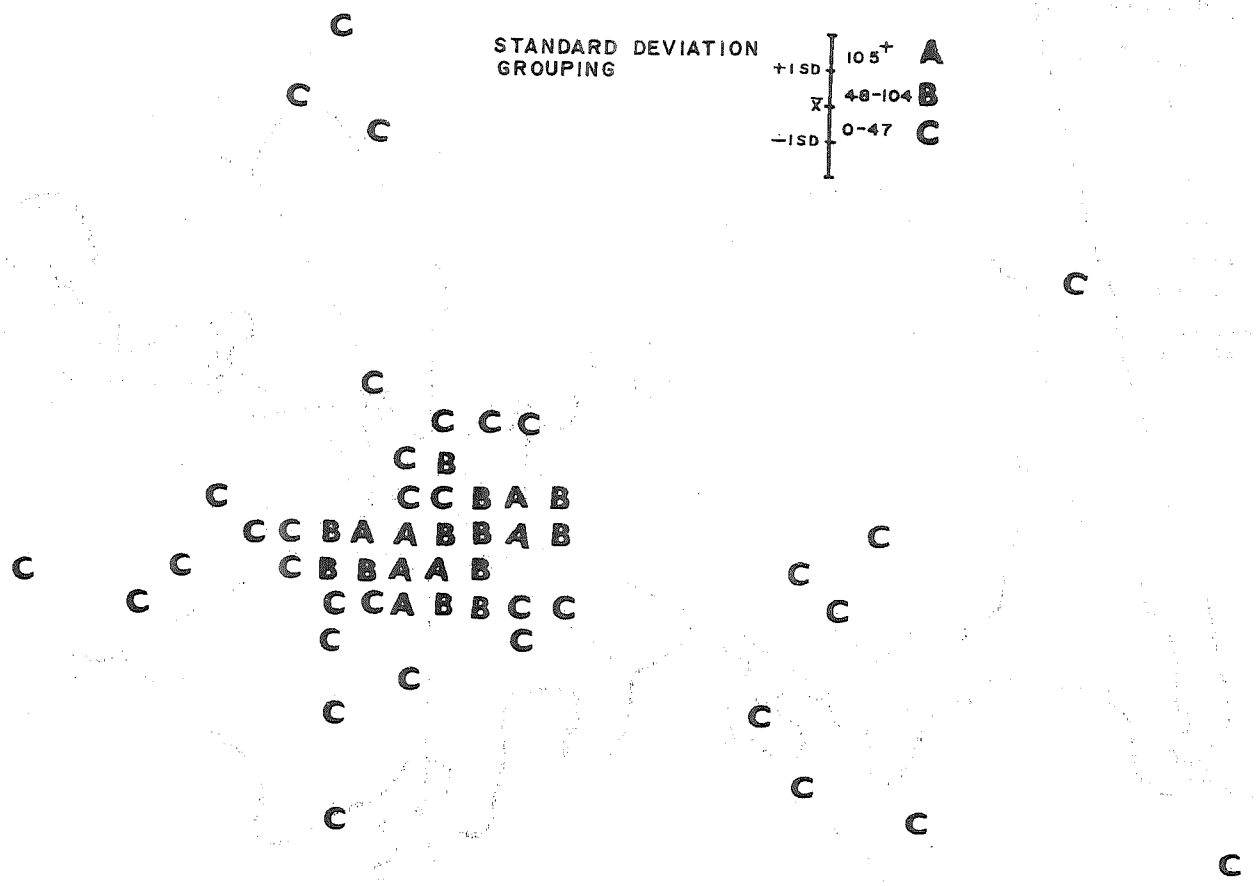

CHRISTCHURCH
STANDARD DEVIATION GROUPING
+1SD
$\bar{x}$
-1SD
7+ A
6 B
0-5 C
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY
A
C

FIG 16


STANDARD DEVIATION GROUPING
+1SD
X̄
-1SD
105+ A
48-104 B
0-47 C

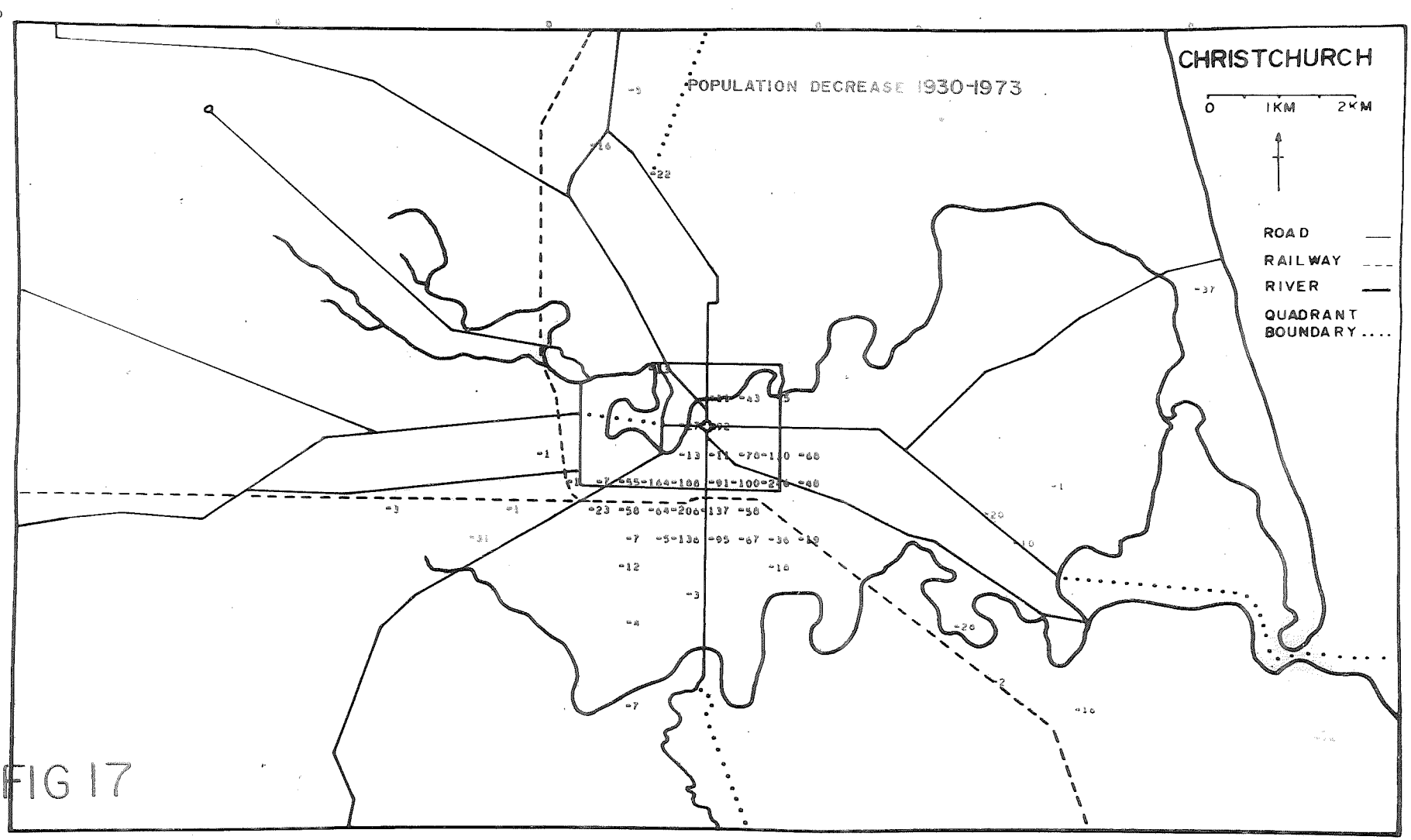
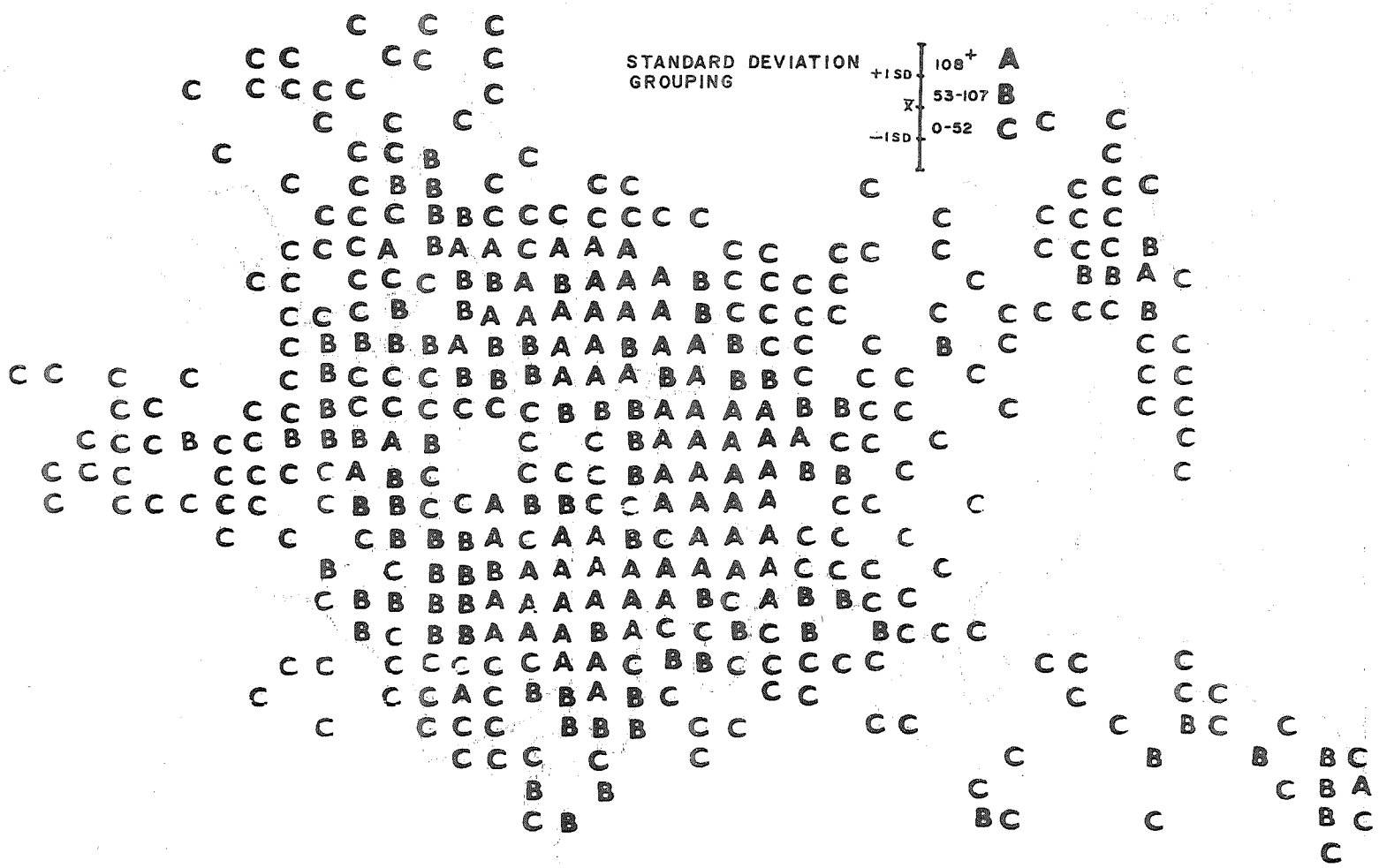

CHRISTCHURCH
POPULATION DECREASE 1930-1973
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 17


STANDARD DEVIATION GROUPING
+1SD
X̄
−1SD
108+ A
53-107 B
0-52 C

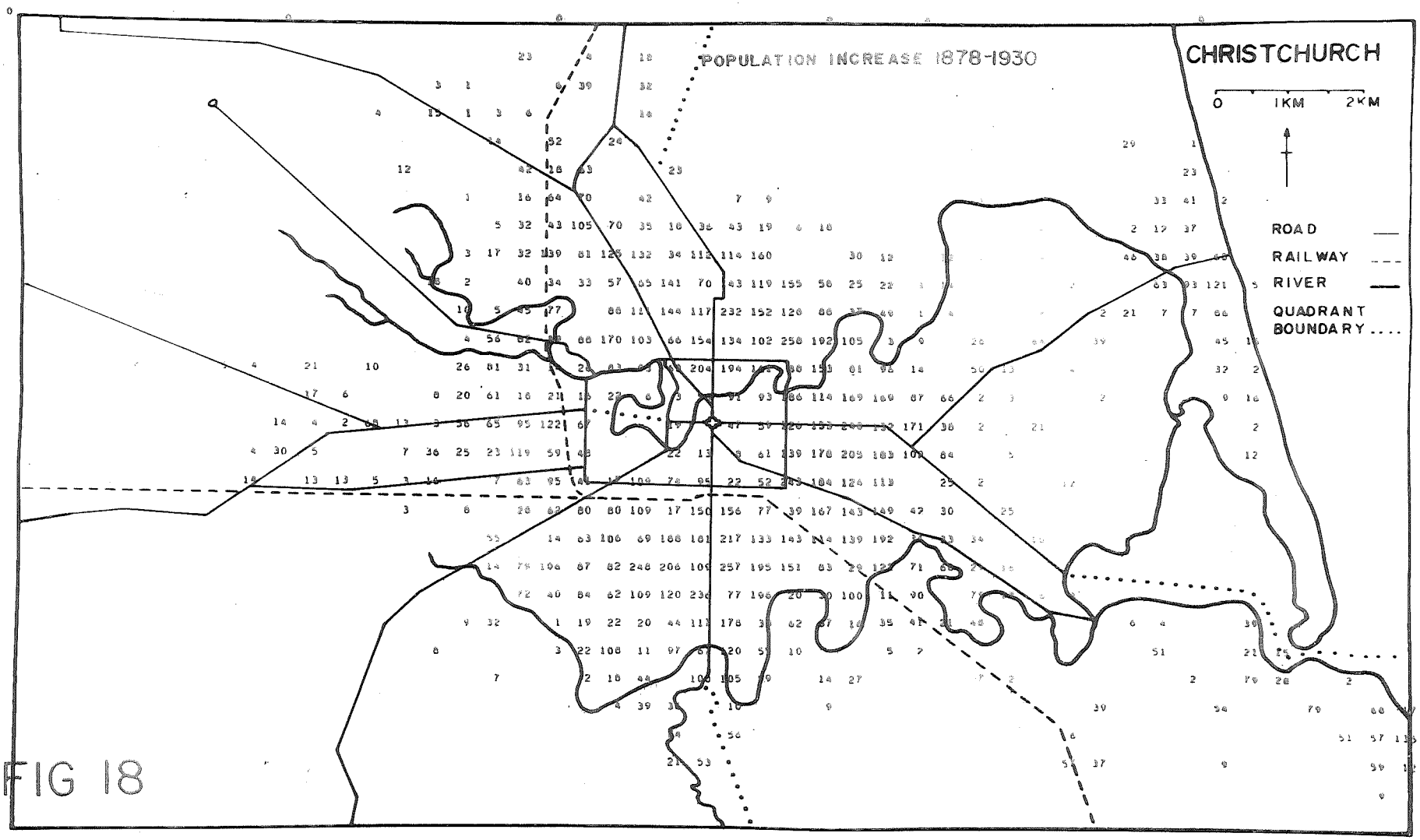
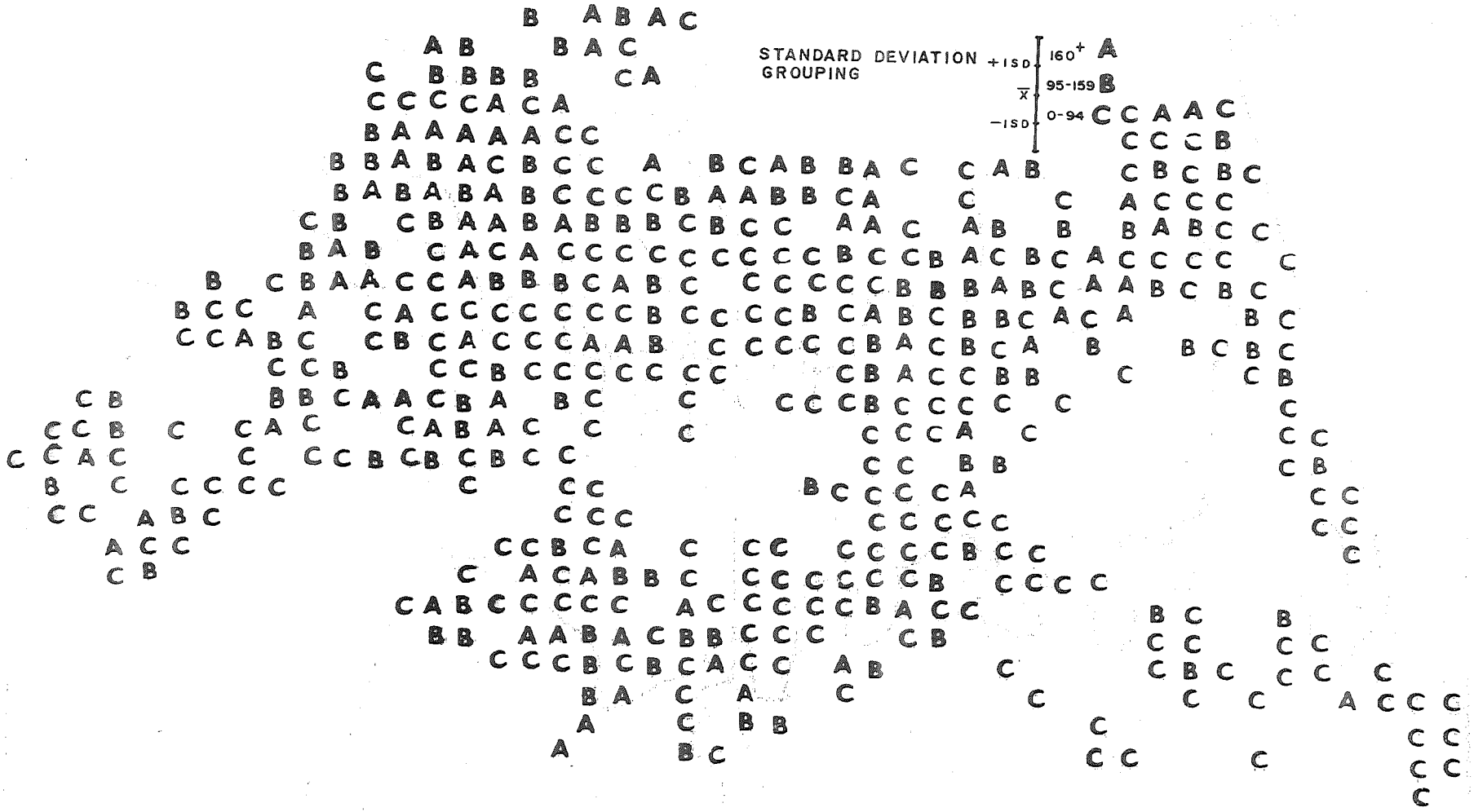

POPULATION INCREASE 1878-1930
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 18


STANDARD DEVIATION GROUPING
+1SD
X̄
−1SD
160+ A
95-159 B
0-94 C

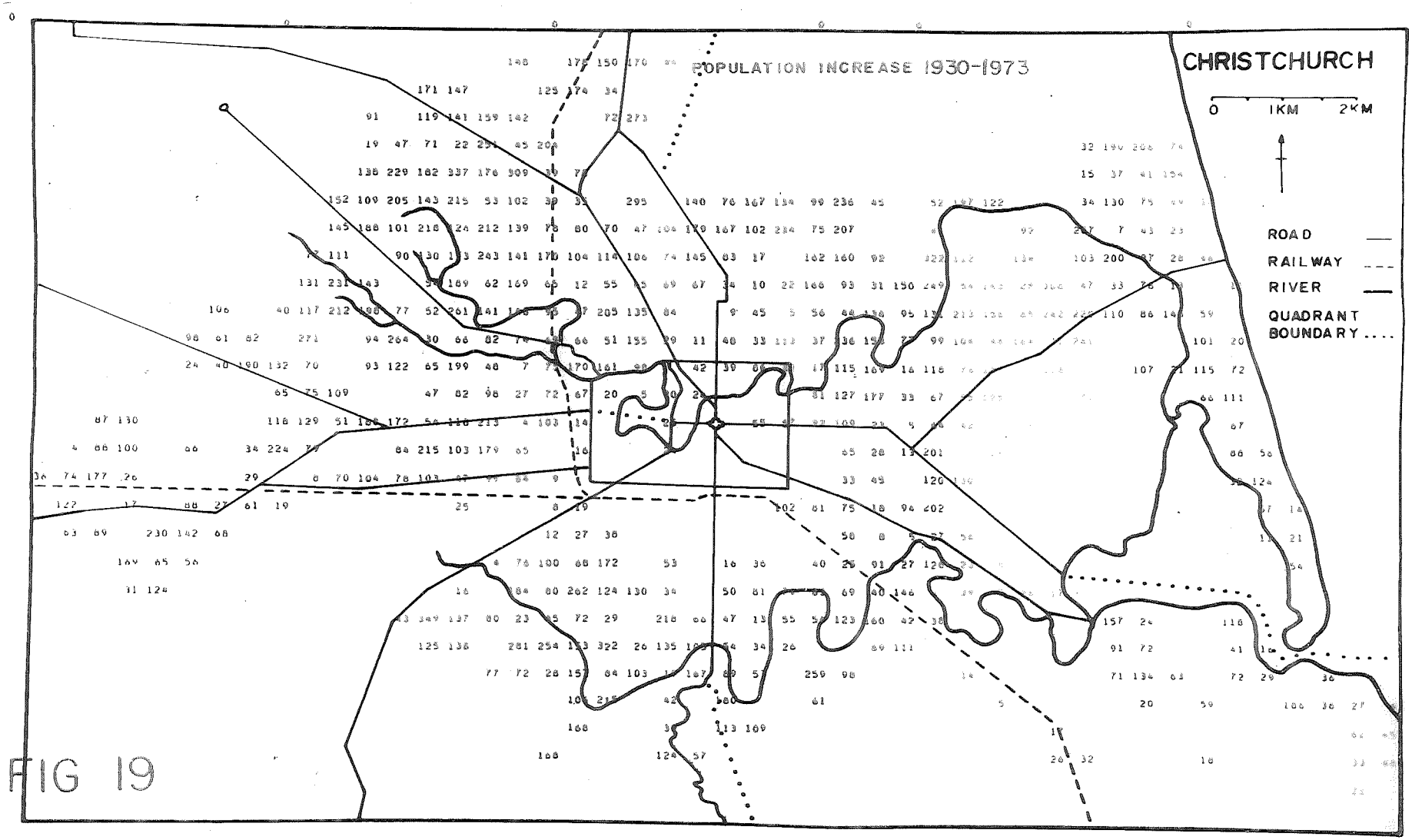

POPULATION INCREASE 1930-1973
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 19

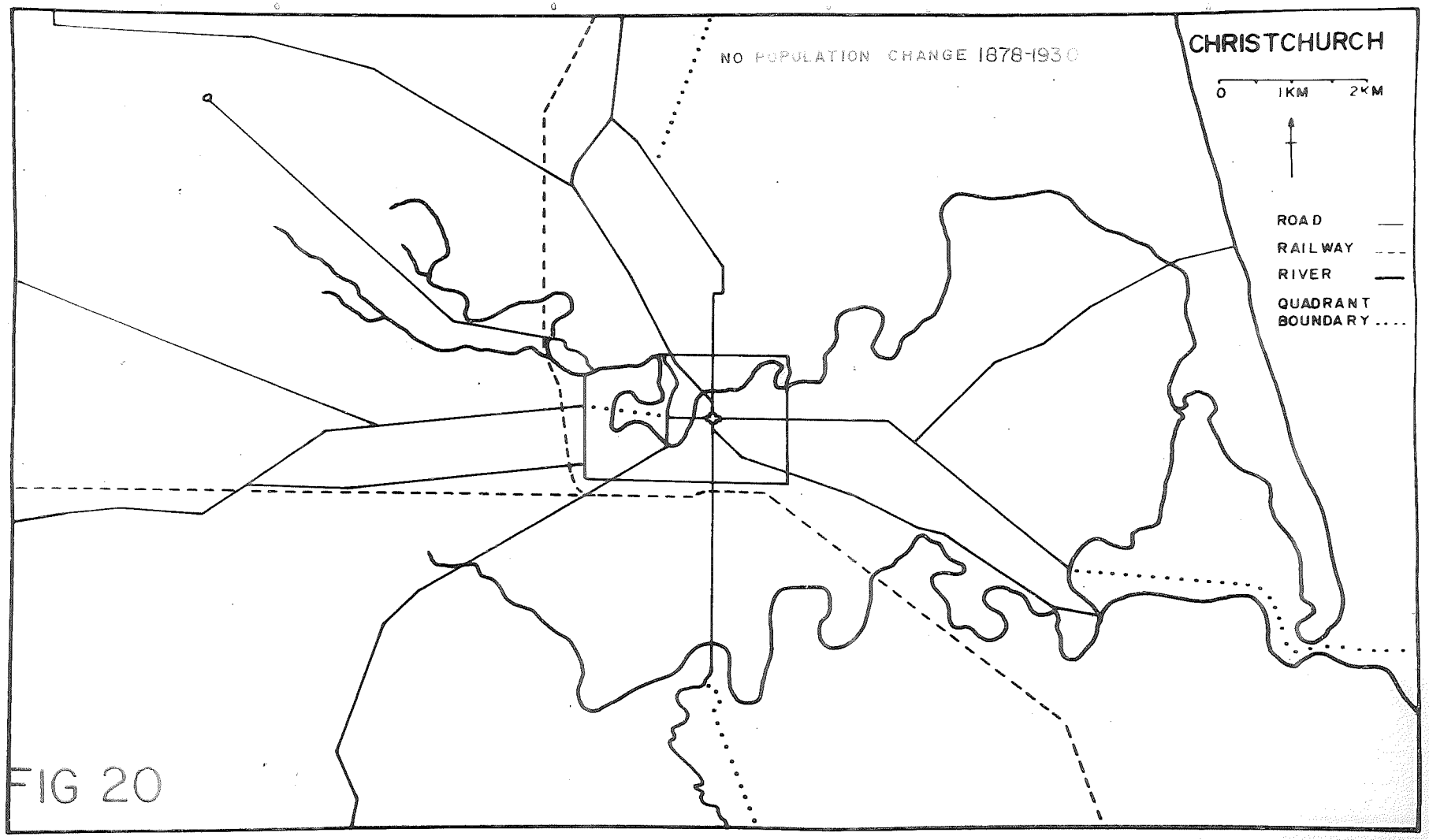

NO POPULATION CHANGE 1878-1930
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 20

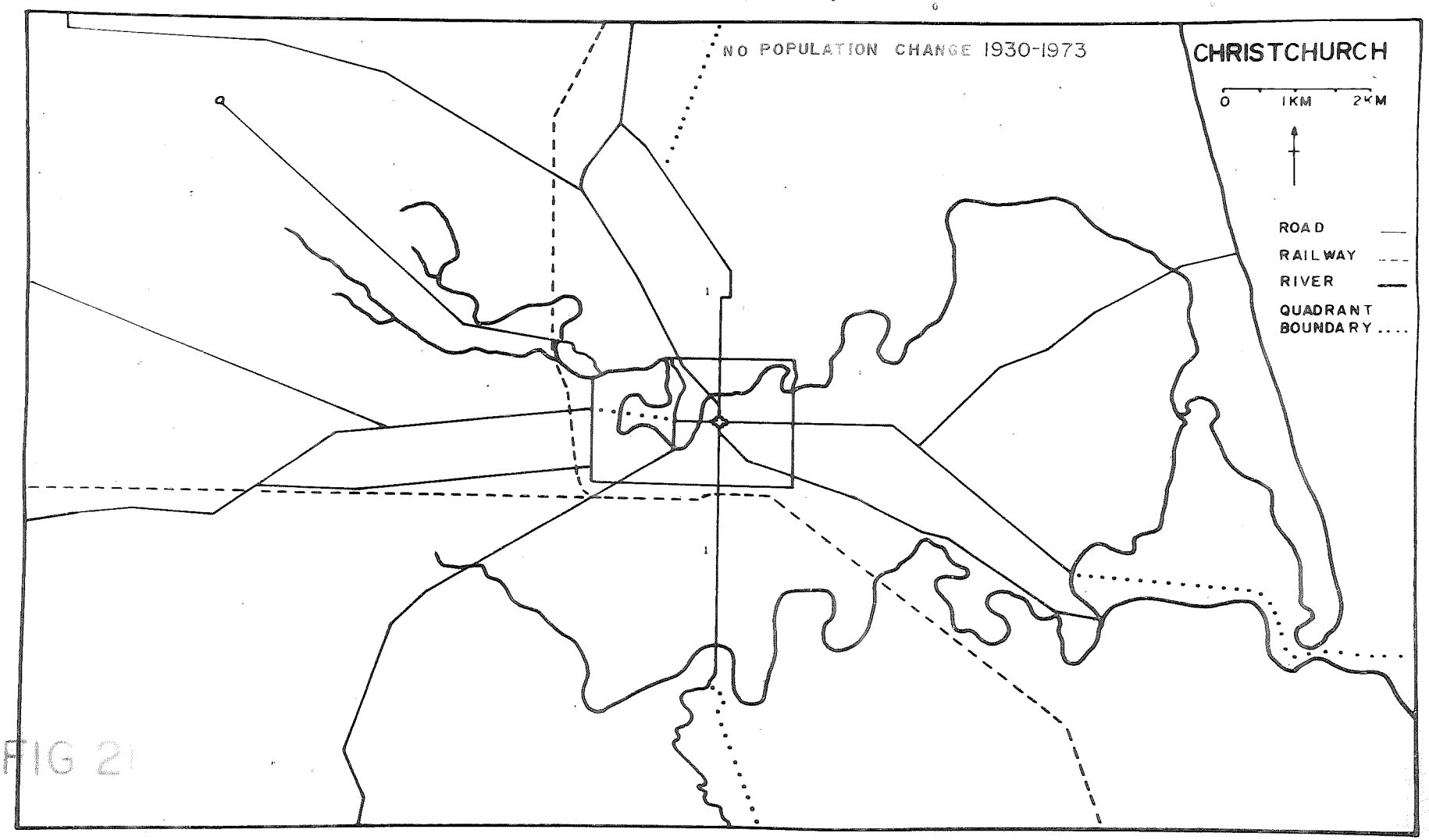

NO POPULATION CHANGE 1930-1973
CHRISTCHURCH
0 1KM 2KM
ROAD
RAILWAY
RIVER
QUADRANT BOUNDARY

FIG 2